Providing advanced hospital care for pregnant women and newborn babies in a country with few nurses, midwives and doctors

Task-sharing: experience from Liberia
Doctors in Liberia (Population 4.5 million)  
Report by Liberian Medical and Dental Council 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

6 based in Monrovia, 3 in Bong county (2 international) and 1 in Nimba (international)

Of 15 counties in Liberia the most rural each have only 1 or 2 doctors
WHO Global Health Repository data published in 2019 on midwives and nurses in the world’s 194 countries

• The two countries with the lowest numbers of midwives and nurses are Somalia (0.6 per 10,000 population) and Liberia (1.0 per 10,000 population). Both countries have experienced recent armed conflict. Between 2014-2015, Liberia also experienced an Ebola outbreak, which killed many healthcare staff.

• Liberia has the 4th smallest number of doctors (0.373 doctors for 10,000 of the population).

• Unfortunately, since recovery from Ebola, the international community’s statements that they would improve the public health infrastructure of Liberia have not materialized.

• High-income countries (e.g. Norway have more than 100 times the numbers of midwives and nurses (181/10,000) than Liberia, available to attend pregnant women and their babies.)
CURRENT STATUS OF Task-sharing in advanced obstetrics

- October 2013-2016 first two senior midwives started 3 years training in CBD hospital which continued throughout Ebola, now qualified as obstetric clinicians

- New set of 9 (7 midwives, 2 PAs) started training November 2015 in 3 public hospitals (2 rural). Included 4 trainees from rural Grand Gedeh.

- In January 2018 these 9 began final year of training in 5 rural county hospitals (CH Rennie, Tellewoyen, Martha Tubman, Fishtown, CB Dunbar). 8 qualified July 2019

- New set of 10 trainee obstetric clinicians (all midwives) began January 2018 Selected by MOH from Maryland, River Cess, River Gee, Grand Gedeh, Lofa and Bong counties

- New set of 9 trainee obstetric clinicians (all midwives) selected and due to start 3 years training May 2020 (RiverGee 1, Bong 2, Lofa 3, Rivercess 1, Nimba 1, Sinoe 1)
Details of training of obstetric clinicians

Three year’s training; 2 years apprenticeship- based plus classroom tutorial training (part international, internet based audio-visual learning) then 1 final year internship in rural public hospitals selected by MOH

OSCE 1: basic surgical skills, pregnancy anatomy and physiology, basic obstetric ultrasound

OSCE 2: major haemorrhage, CS, severe pre-eclampsia: written plus scenarios

Weekly exams based on previous week of day-long classroom teaching

Electronic and paper logbooks of all procedures undertaken and major system problems treated. Electronic accessed by cloud in UK office

Clinical audits focusing on “near death” cases

Evaluation of interns by doctors outside initial training programme

Final exam at LBNM before qualification
Apprenticeship based skills

Training in advanced obstetric techniques led largely by Liberian consultant obstetricians supported by short-term international senior volunteers.

Training supplemented by manuals, videos and E Library of evidence-based up to date videos and publications relevant to Liberia.

Details of every procedure undertaken by each trainee obstetric (and neonatal) clinician collected in a personal paper logbook and electronic database connected by Cloud to MCAI office UK.
Hannah Gibson (qualified obstetric clinician) leading a Caesarean section
For first 2 years, weekly 2-hour tutorials using audiovisual internet-based teaching by UK consultant expert volunteers (in obstetrics and neonatal care).

Teaching based on MCAI international manuals and E Library

Followed each week by exam on previous week’s teaching.

Each marked exam is shared and discussed with each trainee
Increasing responsibility and involvement over duration of training for obstetric clinicians

At first, trainees assist a senior doctor and gradually became more experienced and able eventually to undertake major procedures independently.

Once considered safe to undertake a procedure, a senior doctor is always available to give advice but could be off-site — e.g. asleep at home — or working elsewhere in the hospital.

Trainee and qualified obstetric clinicians end-up supervising junior doctors or other trainees.
Upgrading facilities to ensure adequacy of training and service delivery

- Essential equipment (training hospitals provided with new portable obstetric ultrasound scanners, Caesarean section and laparotomy kits, anti-shock garments, surgical head torches, oxygen concentrators, major oxygen plant for Phebe and neighbouring hospitals, vacuum delivery kits, uterine tamponade kits, biochemistry machines, BP machines, intensive care monitors)
- Essential emergency obstetric drugs such as IV antibiotics, Oxytocin, Misoprostol, Tranexamic acid
- Essential surgical supplies such as sutures, urinary catheters, PPE equipment
- Essential laboratory backup for blood transfusion and biochemistry
- Anaesthetic equipment, drugs and supplies such as spinal needles and bupivacaine
Details of donations to MOH Liberia from March 2019 to March 2020

<table>
<thead>
<tr>
<th>Details of donation</th>
<th>Value of donation USD</th>
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<tbody>
<tr>
<td>Medical equipment</td>
<td>56,627</td>
</tr>
<tr>
<td>Emergency drugs</td>
<td>9,577</td>
</tr>
<tr>
<td>Emergency surgical supplies</td>
<td>10,547</td>
</tr>
<tr>
<td>Emergency medical supplies</td>
<td>5,280</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>82,031 USD</strong></td>
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</tbody>
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Does not include shipping/air-freight costs
Does not include medical and surgical supplies donated to MCAI and then on to Liberia of value approximately 10,000 USD.
EMERGENCY DRUG KITS
Final year obstetric clinician interns travelling in January 2018 to 3 of 4 rural public Liberian hospitals (in WHO transport). Jonathan Lobbo, Emmanuel Hne, Jeremiah Akoi (MCAI Logistician), Jackie Sudue, Ariza Jolo and Lucretia Kokoi. Jackie and Lucretia are on their way to TelLewoyen Hospital in Lofa County and Jonathan, Emmanuel and Ariza to Martha Tubman and Fishtown Hospitals in the SE of the country.
Monthly clinical audit meetings for final year trainees in rural settings using IPAD and internet

1. Discussions concerning “near-death” cases
2. Problems identified in management (major delays in referral and need for waiting homes)
3. Subsequent actions to try and address shortages of drugs, oxygen, electrical power, equipment and supplies

25 yrs. G3 P1 25 hours in obstructed labour at distal clinic before arriving Saturday pm.
Presented shocked HR 140, BP 80/40, Hb. 6.2g/dl, enlarged tender abdomen, fetal parts felt, USS confirmed uterine rupture and IUFD
Trainee obstetric clinician on call and only person able to treat patient in the hospital (all 3 doctors long distances away)
Patient stabilised for shock, 4 units fresh blood for transfusion from relatives, **CHO agreed too sick to transfer**, Trainee operated and successfully repaired major anterior and posterior ruptures into broad ligament. Mother discharged home fully recovered.
Outreach from Martha Tubman Hospital by an obstetric clinician to 3 facilities in Grand Gedeh (February 2020 visit)

<table>
<thead>
<tr>
<th>Health Facility</th>
<th>Cases examined and investigated using portable US scanner, BP and SaO₂</th>
<th>Actions</th>
</tr>
</thead>
</table>
| Jarzon n = 11   | 2 IUFD  
|                 | 1 POST MATURITY/SCAN PLACENTAL ABN.  
|                 | 1 PLACENTA PRAEVIA  
|                 | 1 ABRUPTION  
|                 | 1 UNDETECTED TWINS: TRANSVERSE LIE | Induced Induced Emergency CS Emergency CS Emergency CS |
| Putu Pennonken-Putu n = 10 | 2 PREVIOUS CS  
|                             | 1 GRAND MULTIP MACROSOMIA  
|                             | 1 SEVERE ANAEMIA, SEVERE MALARIA | Attend for CS Attend for CS Blood transfusion |
| Konobo n = 9     | 2 GRAND MULTIP  
|                 | 1 PREVIOUS CS | Attend for CS Attend for CS |
CURRENT STATUS OF Task-sharing: current training in advanced neonatal care

• April 2017 first 4 trainees (3 from Bong 1 from Grand Gedeh). 3 qualified April 2019 but 1 emigrated to USA

• April 2018 trainee to replace emigrant appointed due to qualify April 2020

• September 2018 next 5 trainees (2 from Margibi, 2 from Bong and 1 from Gr Gedeh) started 2 year course, are now interns and qualify September 2020

• New set of 8 trainee neonatal clinicians selected March 2020 and due to start 2 years training in May 2020 (RiverGee 1, Sinoe 2, Lofa 2, Rivercess 1, Gr Gedeh 2 including 1 from Konobo)
Classroom (via internet and AV teaching by international consultant paediatricians from UK) plus apprenticeship/skills-based teaching led by international advanced neonatal nurse practitioner (Kola Adeyemo) with support from volunteer international paediatricians on newly equipped (by MCAI, MOH and UNFPA) NICU at CB Dunbar Hospital

Neonatal resuscitation skills well-developed and trainees attend all neonates who do not breathe immediately and also those where respiratory distress is anticipated

Skilled at managing common neonatal emergency conditions

Provide respiratory support with oxygen and nasal CPAP

Numerous babies would otherwise have died, including many surviving 28-29 weeks gestation

Additionally providing neonatal intensive care now in new neonatal units at CH Rennie, Martha Tubman and Phebe Hospital
NEW NEONATAL UNIT AT CB DUNBAR HOSPITAL
ABOVE: Neonate receiving nasal continuous positive airway pressure (CPAP) for respiratory support

BELOW: Trainees with a newborn infant born by CS at 28 weeks (1.25Kg) whose mother died during delivery following eclampsia. “Success” was resuscitated for 3 minutes with bag and mask ventilation and later started to breath spontaneously and was taken to the NICU.

With much help from his father and the neonatal team, this baby went home

Success reviewed two months after discharge
2020 three very low birth weight babies referred to training unit at CB Dunbar Hospital

Two of the babies were referred from Nimba county with birth weights of 1kg respectively; unfortunately one of the twin born babies died before they reached CB Dunbar Hospital. The other baby on the left was born in CB Dunbar with a weight of 1Kg too and she now weighs 1.7kg. The three babies are currently doing well with current weights of 1.35, 1.55 and 1.7kg
Possible ways forward in this National Task Sharing Program

1. Institutionalizing specialist task-sharing training within a nursing school or university to provide higher qualification. Current progress between Tubman University and the Global Health Academy at Edinburgh University in Scotland

2. Major role for the Liberian Board for Nursing and Midwifery

3. Scaling up and rolling out training to provide support for the MOH in setting up teams in rural facilities to reduce maternal and neonatal mortality (doctor plus obstetric clinician plus neonatal clinician plus nurse anaesthetist) and comprehensive EmONC facilities (surgical, blood transfusion etc.) to support such teams

4. More outreach between comprehensive EmONC centres and rural health facilities.

5. Continuing existing partnership with UN systems and expanding to other organisations who are trying to reduce maternal, neonatal and child mortality
Registration and licensing of midwives and nurses after training and where evidence of safe practice is certified by examination and assessment

A contract is in place with MOH which guarantees that successful midwives or nurses on these training programmes will be registered and given a licence to practice for a minimum of 5 years in the public health system of Liberia as “obstetric clinicians” and “neonatal clinicians”

We put emphasis on professional standards and medical ethics
Conclusions

Task-sharing between doctors, midwives, nurses and nurse anaesthetists undertaking comprehensive EmONC is effective and sustainable in Liberia where currently there are inadequate numbers of healthworkers trained in advanced obstetrics or hospital based neonatal care: especially helpful in rural facilities.