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Lessons from the field

Training of midwives in advanced obstetrics in Liberia

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Introduction

In February 2012, Maternal and Childhealth Advocacy International approached the Liberian Ministry of Health and the World Health Organization (WHO), proposing a collaborative partnership to reduce rates of maternal and neonatal mortality in Liberia. One aim was to address the shortage in doctors by training experienced midwives in advanced obstetrics. In October 2012, a formal partnership – including a pilot project training two experienced midwives – was established.

There are at least three reasons for the major shortage of doctors in Liberia. One is the armed conflict that ravaged the country between 1989 and 2003. Another is that more than three quarters of doctors trained in Liberia emigrate to practice elsewhere.¹ Finally, 184 health workers in Liberia died from Ebola virus disease in the 2013–2016 outbreak.² According to the ministry of health, only 117 doctors were available in the country in February 2015.²

In 2012, the United Nations Children's Fund reported that Liberia had 990 maternal deaths per 100 000 live births, 34 neonatal deaths per 1000 live births and a lifetime risk of maternal death of one in 20.³ The corresponding values reported in 2014 were similar: 990 maternal deaths per 100 000 live births, 27 neonatal deaths per 1000 live births and a lifetime risk of maternal death of one in 24.⁴

In September 2013 – after a debate supported by the ministry of health –

the Liberian Medical and Dental Council approved the provisional registration of the first two midwives to train as obstetric clinicians. The midwives' selection for this pilot study was based on their five to six years' experience in midwifery, the quality of their work in public health facilities and their performance on an internationally accredited three-day training course in emergency obstetric and neonatal care held in Liberia.⁵

Approach

Apprenticeship-based training in advanced obstetric care was undertaken in CB Dunbar Maternity Hospital, which lies in Bong county – a rural area of almost 9000 km² with a population of about 330 000. This hospital is the county's main provider of maternity care, caring for approximately 2000 deliveries per year – many seriously complicated by poverty and by delays in transfer from remote villages.

A curriculum was provided by Maternal and Childhealth Advocacy International⁶ and education was led by a Liberian consultant obstetrician with support from two international obstetricians and a professor of paediatrics.

The education materials provided to the trainees and trainers included a practical manual⁷ and pocket book⁸ produced by Maternal and Childhealth Advocacy International, a manual of basic practical skills in obstetrics and gynaecology,⁹ a manual on diagnostic ultrasound¹⁰ and a textbook on surgical care.¹¹ Videos of maternal and neonatal care produced by the Advanced Life Support Group, Global Health Media, Maternal and Childhealth Advocacy International, Medical Aid Films and WHO were also used.

The training began in October 2013 – i.e. a few weeks after preregistration on 3 September 2013. The first three months consisted of a mixture of theory and practice, as outlined in the curriculum.⁶ This foundation training covered knowledge of the anatomy of the female pelvis, basic surgical skills such as suturing, sterilization of instruments, hand washing and the proper use of gowns and gloves, maintenance of the operating theatre, postoperative care, the obstetric use of ultrasound and a basic understanding of obstetric anaesthesia. With the ultrasound, trainees were expected to learn to recognize malpresentations, placenta praevia and other possible problems that may make surgery difficult. At the end of the foundation period, the Liberian and international trainers used an objective structured clinical examination in obstetric anatomy and basic surgical skills to determine the trainees' progress.

The trainees' practical skills were increased in the apprenticeship-based training that ran for two years – initially in parallel with classroom-based foundation training. Apprenticeship-based training consisted of a mixture of work experience – when the trainees undertook essential obstetric procedures and treated major complications of pregnancy and delivery – and training in systems of care and team working.

The trainees were given increasing levels of responsibility and involvement over time. At first, the trainees just assisted a senior doctor but, as time passed, they became the primary people undertaking the procedures, albeit always with a senior doctor in the hospital who could give advice or assistance. At this stage, a trainee would often be working

with – and supervising – a junior doctor, a peri-operative nurse or at least one other midwife. As time passed, the trainees were given more independence. For example, they were allowed to perform caesarean sections either with someone who had not been trained to do the procedure or with someone who had been trained but played no active role in the surgery. At this stage, a senior doctor was always available to give advice but that doctor could be off-site – e.g. asleep at home – or working elsewhere in the hospital. Records of each procedure involving a trainee were kept in a paper logbook and on a tablet computer.

For quality control, there was continuous clinical assessment of the trainees and examination of the procedural logbook, case-based discussion, supervisor-observed experience and reflective practice forms.

At the end of two years, the trainees were given internships during which they are to continue their apprenticeship-based training for at least one year in Liberian hospitals, supervised by senior doctors. During internships, each trainee will undergo a period of observation – as she undertakes advanced procedures – by Liberian Medical and Dental Council officers, the main Liberian trainer and an international obstetrician. If these observers see evidence of adequate skills and knowledge, and if the trainees pass a final, written examination, trainees will receive a five-year licence to practice as obstetric clinicians in public hospitals chosen by the Liberian Ministry of Health.

Both trainees received their basic hospital salary throughout the project. They also received incentives of 150 United States dollars (US\$) per month from Maternal and Childhealth Advocacy International during their apprenticeship, which increased to US\$ 300 when they became interns.

Results

Both trainees successfully completed the objective structured clinical examination and scored high marks in surgical equipment and practice (17/20 and 17/20), opening and closing the abdomen (21/27 and 22/27), uterine anatomy (25/33 and 23/33), bony pelvis anatomy (17/20 and 13/20) and vulval and vaginal anatomy (34/40 and 31/40). Overall scores for the two trainees were 114/140 (81%) and 106/140 (76%).

During their apprenticeship-based training, the two trainees were closely involved with hundreds of advanced obstetric procedures and the management of many serious complications of pregnancy or delivery (Table 1). The trainees participated – often in a leadership role – in the management of all activities within the maternity unit and helped to ensure that the labour and delivery wards and operating theatres were well organized, effective and safe (Box 1). They worked as part of the medical team on shifts of 48–72 hours, supported the senior doctors and helped to train junior doctors. Although there was considerable personal risk, the trainees and their Liberian trainers worked through the outbreak of Ebola virus disease. Support from the trainees – especially at night – helped to provide better sleep patterns for the hospital's doctors. Although many of the women treated by the trainees were seriously ill, none of them died. The trainees were involved in the successful resuscitation of 73 neonates who did not breathe at birth. At the time of writing, both trainees are awaiting final licencing by the Liberian Medical and Dental Council.

Table 1. Actions of the two trainees during the first 18 months of their preregistration training, Liberia, 17 October 2013–31 March 2015
html, 4kb

Box 1. Summary of main lessons learnt

- Experienced midwives can become obstetric clinicians by being taught the skills needed to undertake advanced obstetric procedures such as caesarean sections.
- Obstetric clinicians can work well within a maternity team, assisting doctors and providing improvements in comprehensive emergency obstetric and neonatal care.
- Obstetric clinicians are likely to be particularly valuable in rural hospitals in resource-poor countries where there are few doctors trained in advanced obstetrics.

Rates of maternal and neonatal mortality in Bong county were documented. However, the potential impact of the training programme on these rates was difficult to evaluate because of the outbreak of Ebola virus disease. As the programme continues, its impact on mortality and morbidity should be easier to document.

Discussion

It appears that, before this pilot project, there was no formal training for midwives to undertake advanced surgical obstetric care.¹² The arguments as to why such training is needed in many rural areas of sub-Saharan Africa where there are few doctors and under special circumstances have been summarized elsewhere.¹²

A year of negotiations was necessary before the Liberian Medical and Dental Council were willing – provisionally – to register the first two trainees. The delay reflected doubts from some doctors about the likely benefits. A senior doctor who began working with the two trainees halfway through their training was initially worried about whether midwives could ever safely undertake procedures such as caesarean sections. After a few weeks working alongside the two trainees, however, this doctor became convinced that this approach represents a necessary and effective way forward for rural hospitals in Liberia.

The Liberian Ministry of Health has now agreed to increase the number of obstetric clinicians in Liberia, via a second round of training. Another seven experienced midwives started training in October 2015 – together with two physician assistants with extensive experience in midwifery. Four of the new trainees come from a hospital in a remote county of Liberia where there is only one doctor undertaking advanced obstetric surgery. Once trained, some of these four trainees will return to work long-term in this hospital.

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Competing interests:

None declared.

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