

Real time learning in disaster contexts: The case of Health Partnerships during the Ebola outbreak in Sierra Leone

1. Introduction

The first case of the Ebola virus disease (EVD) surfaced in the Western area of Sierra Leone in June 2014. The disease spread quickly, and by July there was in excess of 1,000 cases. The national health system was quickly overwhelmed and the Kings College Sierra Leone Partnership (KSLP) found itself at the heart of an epidemic disease outbreak.

The KSLP partnership had been established in early 2013 to support health system strengthening in Sierra Leone. It focused on long-term capacity building and was inexperienced in emergency response. Nevertheless, being on the ground and holding close working relationships with relevant Ministries, the partnership was able to mobilise rapidly. Familiarity with hospital management, facilities, local culture and the Krio language also proved invaluable.¹

The KSLP partnership is based in Connaught Hospital and exists between Kings Health Partners (KHP) in London and three Sierra Leonean institutions:

- The Ministry of Health and Sanitation (MOHS);
- Connaught Hospital, the country's main teaching and referral hospital;
- The College of Medical and Allied Health Sciences (COMAHS), Sierra Leone's only medical and pharmacy school, and the primary institution for basic and specialist nurse training.

Led by local staff, KSLP developed Ebola Holding Units (EHUs) at Government Hospitals in Freetown, which played a key role in bringing the outbreak under control. An important component of the partnership was building institutional resilience and capacity by training local healthcare workers (HCW) in safety and patient care.

This case study explores the KSLP and the ways in which the partnership adapted its approach to respond to the outbreak investing in capacity building. It provides a valuable example of real-time learning as well as the role of international partnerships during a humanitarian response.

¹ Johnson, O. (2014). 'The Eye of the Storm: Ethical Challenges at the Front Line of an Ebola Outbreak'. *KSLP website*. <http://kingsinthefield.blogspot.co.uk/2014/06/the-eye-of-storm-ethical-challenges-at.html> (accessed 5 January 2016)

2. Methodology

This case study recounts the real-time social learning journey of local healthcare workers. It uses a mixed methods approach, including:

1. Desk review of secondary data sources such as academic articles and blogs authored by KSLP members.
2. In-depth interviews with members of the Freetown-based KHP team.

3. Knowledge sharing

The KSLP partnership had been established for over a year by the time of the Ebola outbreak. This section looks at learning activities before, during and after the disease outbreak, with a focus on real-time learning during the emergency (a timeline of events is provided in Figure 1).

3.1 Before crisis

Prior to the crisis, KSLP had a broad remit, that included setting up a triage unit in the emergency department of Connaught Hospital, establishing a regular teaching programme for junior doctors and helping hospital management to develop processes and financial systems. The partnership employed five international staff members at Connaught, four of whom were volunteers and one who was seconded from King's College London. Capacity building activities included on-the-job training for medical students and junior doctors on issues of clinical management.

3.2 Crisis response

The KSLP (including the MOHS) quickly established Ebola isolation facilities at Connaught Hospital and four government hospitals in the urban Western area of Sierra Leone. The Ebola Holding Units (EHU) were constructed in existing healthcare facilities, by repurposing existing buildings or constructing standalone units within hospital grounds. The EHUs met international and national standards but faced significant challenges in delivering care. For example, EHUs operated with low staff numbers compared to other types of facilities.

In August 2014, Dr. Modupe Cole, the head of the Connaught Hospital EHU, contracted Ebola and passed away. His death coincided with the World Health Organisation declaring a public health emergency. This forced the international clinical team at KSLP to reflect on the outbreak response and KSLP's plans. Dr. Marta Lado, a consultant in infectious diseases and Lead of the clinical team at Connaught explains:

That's when things started to get bad in the country and we started having problems with the rest of the healthcare workers - residents and nurses started refusing to come into work. It was difficult to convince senior medical practitioners to take over the facilities. That's when we decided to lead the EHU; we said to each other 'we are not an emergency organisation, but we are a partnership. And we need to stick around for the bad times, like we would in the good times.' This was with the caveat that local staff would come in and the hospital would stay open. In the beginning it was just us, 2-3 of us from Kings working. We were able to then convince a couple of

cleaners to come to work and then a couple of nurses, and then they convinced other nurses. By November-December we had about 50 people nurses and cleaners working in the unit.²

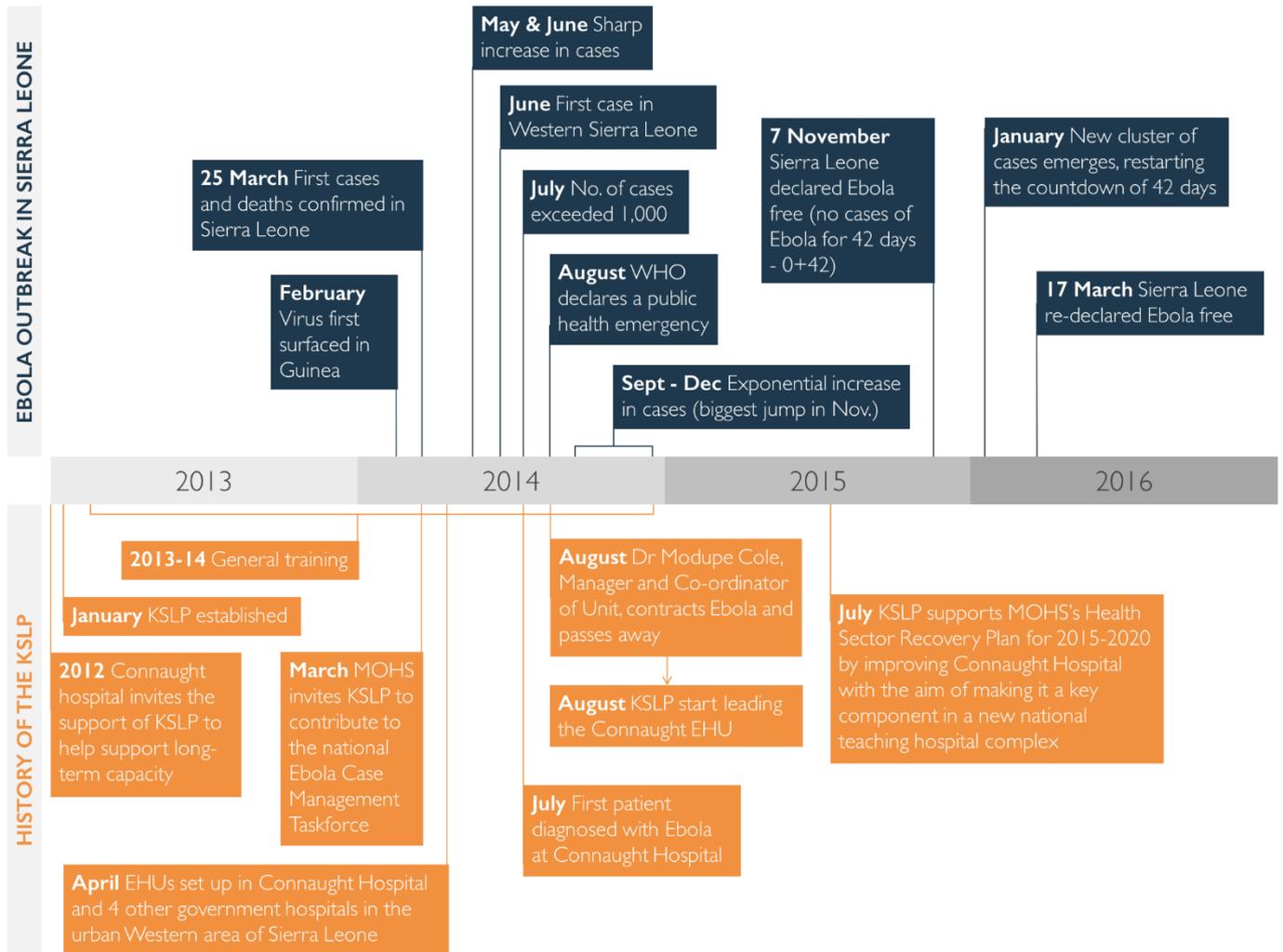


Figure 1. Timeline of events

² Dr Marta Lado, 2017, Interview.

The KSLP began support for six hospitals across Freetown to set up Holding Units and helped institutions such as the international NGO 'Partners in Health' and the Republic of Sierra Leone Armed Forces (RSLAF) in setting up holding and treatment facilities in Freetown and other parts of Sierra Leone. KSLP was also instrumental in setting up the Western Area Command Centre, a key part of managing various elements of the response, such as managing bed capacity, transportation of lab samples, transfer of patients and safe burials.

Capacity building was one of the main goals of the KSLP. Using their experience from the Connaught EHU, KSLP developed a training method designed to increase resilience and staff support from a central site. Approximately 300 local HCWs were trained at the hub in how to identify, isolate, and provide initial treatment to patients. Formal training on Infection, Prevention and Control (IPC) and clinical management was given to core HCWs through three phases of learning:

1. Classroom-based teaching on theories and guidelines (between 6 and 10 people subdivided into smaller teams of 3-5);
2. Practical application of protocols within the Connaught EHU, which provided the opportunity to engage in a live environment;
3. Revalidation of training in staff's own EHUs (including continual assessment and training on new protocols).

In addition, separate training and support was also provided to:

- non-clinical staff, such as carpenters, electricians and carpenters, to use Personal Protective Equipment (PPE); and
- a rotation of incoming international volunteers. International volunteers had received training in their home countries, but a further session was organised on how to use local equipment (the KSLP relied on the local supply chain where possible, in order to avoid creating a parallel system).

In addition to formal training, the KSLP developed informal knowledge sharing activities with HCWs at the Connaught Hospital and at other Government holding units. For the Connaught HCWs, this included on-the-job mentoring, coaching, observation and assessment. Role modelling was used as to build the confidence of local staff and a monthly performance related bonus system was implemented to incentivise staff, provide feedback, and evaluate performance and safety. Every month HCWs were given an 'assessment letter' alongside the bonus that assessed their punctuality, work performance and safety measures such as wearing gloves and masks, and washing hands.³

Support for other holding units was less intensive. When the EHUs initially opened, clinicians from KSLP accompanied HCWs on patient visits, helping build confidence. After a few weeks, KSLP only sent clinicians for difficult cases. While training, mentorship and supportive visits from KSLP were ongoing throughout the outbreak, the supported Units were led and managed by local staff. These EHUs did not employ a financial incentive system and it was concluded that 'good

³ Lado 2017.

mentorship and encouragement were sufficient to motivate staff.⁴ Suzanne Thomas, the Freetown-based Education Manager described the team spirit during the response:

Our approach was that we are a team and as a team we are going to keep each other safe. It wasn't about one-off training, it was about working alongside people; mentoring and supporting them. It was important for us to be there for the implementation and building up the confidence of local staff. There was a high risk to health care workers, and people were conscious of that as they had seen their colleagues die. One of the ways that we tried to address is that by saying 'we will go in with you, we will do this work with you, we will help you to stay safe.' That was our vow to our colleagues, and it was an important aspect of learning. Keeping our colleagues safe and patient care were equally important.⁵

3.3 Post-crisis learning

On 7 November 2015, Sierra Leone was declared Ebola free. The KSLP organised a refresher training for key personnel – doctors, nurses and hygienists from different health care facilities – with the dual purpose of refreshing learning on Ebola management and discussing lessons learnt and preparing for an effective response. Simulations were used to provide training on case management and patient care, using actors to recreate different scenarios in the EHU. Key personnel from Connaught and other government and military hospitals were invited to attend. The training facilitators noted that this phase was more learner-driven than phases 1-3 as learners' were able to verbalise their learning and knowledge needs. In earlier phases, unfamiliarity with EVD meant learners were unable to articulate, or even determine their learning needs in real time. The refresher training therefore aimed to promote sustainability by building the capacity of local staff to deliver future training to a larger number of HCW.

3.4 Knowledge capture

The partnership experience has been captured in two academic articles as well as on the KSLP website. Technical aspects have been recorded in training manuals, which are used for refresher courses. KSLP also built on existing documents to help develop national hospital guidelines for triaging patients, and developing safe isolation and testing. It also contributed to interim emergency guidelines drafted by the MOHS and WHO entitled 'Clinical Management of Patients in the Ebola Treatment Centres and other Centres in Sierra Leone'.⁶ The KSLP also worked with WHO to develop guidelines on training and clinical management. The protocols have been included in the Standard Operating Procedures of the MOHS. Moreover, an adaption of the guidelines for the Sierra Leonean context will be published later this year.

⁴ Brown, C et al. (2016) 'Ebola and Health Partnerships, Action in a Time of Crisis'. <http://www.intechopen.com/books/ebola/ebola-and-health-partnerships-action-in-a-time-of-crisis> (Accessed 17 November 2016)

⁵ Thomas 2017.

⁶ WHO and MOHS (2014) 'Clinical Management of Patients in the Ebola Treatment Centres and other care centres in Sierra Leone: a pocket guide' [Interim emergency guidelines: Sierra Leone adaptation of the WHO generic.](http://imaiinicialliance.org/documents/Sierra%20Leone%20Ebola%20Treatment%20Center%20pocket%20guide%20December%202014.pdf) MOHS. <http://imaiinicialliance.org/documents/Sierra%20Leone%20Ebola%20Treatment%20Center%20pocket%20guide%20December%202014.pdf> (accessed 14 January 2016)

4. Learning outcomes

This section explores the outcomes of KSLP knowledge sharing. By relying on localised approaches, the KSLP partnership was able to save lives (of patients and HCW) while reducing costs, and building individual capacity and institutional resilience.

4.1 Curtailing EVD

The KSLP partnerships contributed significantly to the control of EVD and supported the Connaught Hospital to be able to continue providing normal medical care. The six units supported by KSLP managed over 14% of all Ebola cases in Sierra Leone (and over 40% of those in Freetown), for less than 1% of all UK expenditure on the crisis.⁷ The EHUs significantly reduced the number of cases in the community. They saw 2,571 suspected cases, of which 1,159 were positive. These 1,159 cases were isolated in EHUs when no other isolated hospital beds were available. In addition, Connaught's EHU staff managed over 1,100 suspected, and over 650 confirmed cases of Ebola in the hospital.⁸

Construction of the EHUs also protected HCW by ensuring proper handling of infected patients. For example, 'before the construction of the EHU at Rokupa Government Hospital, the hospital had 11 HCW infections in 3 weeks. After construction of the EHU at this hospital, there were none'.⁹

4.2 HCW and EHU capacity building

The monthly assessment notes gathered for all HCWs at Connaught Hospital present compelling evidence of real-time learning during the EVD outbreak. The full bonus was paid in more than 90% of cases. Furthermore, the withheld bonuses were primarily related to attendance issues rather than performance or safety-related issues.¹⁰ The infection rate of HCW at the Connaught Hospital EHU was also extremely low compared to other facilities.¹¹ This was viewed as evidence of HCW learning to protect their own safety, a key aim of the training.¹²

There is evidence that the partnership also achieved its goal of building the capacity of the EHU staff to run the unit independently in future. During post-disaster training, international clinicians were impressed with the level of knowledge HCW brought to the simulation exercises.¹³ Moreover, many of the HCW were seconded to support and mentor teams in other districts of Sierra Leone during the latter period of the outbreak. The increased competency of local HCW also led to a significant decrease in the number of international staff 'so that by the end of the outbreak only one international clinician was on-call to assist with clinical issues'.¹⁴

KSLP hopes the training will support on-going resilience to EVD. While some of the clinical and non-clinical staff members remain at the KSLP supported hospitals, others have now transferred to other hospitals in the country. Some HCW are now undertaking further educational programmes

⁷ KSLP (2016) 'KSLP Ebola Response' *KSLP* website. <http://kslp.org.uk/about-kings-sierra-leone-partnership/ebola/> (accessed 12 January 2016)

⁸ Ibid.

⁹ Johnson, O et al. (2016) 'Ebola Holding Units at government hospitals in Sierra Leone: evidence for a flexible and effective model for safe isolation, early treatment initiation, hospital safety and health system functioning', *BMJ Global Health*. <http://gh.bmj.com/content/1/1/e000030> (Accessed 17 November 2016)

¹⁰ Lado, 2017.

¹¹ Thomas 2017; Brown et al. 2016

¹² Suzanne Thomas, 2017, Interview

¹³ Lado, 2017.

¹⁴ Brown et al. 2016.

on the MOHS priority areas of A&E, Infection, Prevention and Control and WASH projects, which has the potential of increasing institutional resilience.¹⁵

5. Lessons learnt

This case study provides four valuable lessons on building capacity during a humanitarian response.

5.1 Learning by doing

The chaotic, unpredictable and evolving nature of the outbreak, required adaptive, social learning approaches. The King's team were continually learning how best to support their local colleagues. They were able to gain insights into the challenges in the EHUs, and to continually develop and adapt their training approach. Moreover, informal coaching and supervision allowed them respond to individual learning needs. Staff were credited for what was working well and given feedback on what was not working, in real-time.¹⁶ This was vital, because

*Every single move they make in treating a patient must be perfect. One slip-up - a torn glove or the smallest splat of infected fluid that gets on them could cost them their lives.*¹⁷

The decision for the KSLP international staff, most of whom were volunteers, to remain in Freetown was momentous. Working side-by-side with highly trained international clinicians helped allay some of the fears local staff members had and built their capacity to work in a high-risk environment.

The training was very practical. Local staff valued the experiential learning methodology, which was very different to their previous training experiences.¹⁸ Even classroom-based theoretical learning had a very practical slant.

5.2 The value of local ownership

KHP partnered with the MOHS to construct five EHUs during May to October 2014, when the number of cases in Sierra Leone was increasing exponentially. The MOHS provided the 'overall strategic leadership' as well as taking responsibility for local HCW, buildings and spaces, personal protective equipment and medical supplies, and support functions. This reliance on local leadership, existing facilities, government systems and supply chains, promoted local ownership while building institutional capacity. It not only mitigated against undermining of local systems but

¹⁵ Thomas 2017.

¹⁶ Thomas 2017.

¹⁷ Fantz, A. (2014) 'For Ebola caregivers, enormous fear, risk and bravery' CNN. <http://edition.cnn.com/2014/10/12/health/ebola-health-care-workers/> (Accessed 5 January 2016)

¹⁸ Thomas 2017.

also reduced the costs associated with establishing expensive parallel systems. Using local supply chains and existing logistics, waste management facilities, and staffing schedules, meant that start-up times were very quick: it took approximately one week for units to become operational.¹⁹

Partnership requires trust, good communication, mutual empathy and strong, and sustained leadership from all sides, which can take time to build. In this case, the pre-existing partnerships and the established KSLP base at the Connaught Hospital were key. KSLP had good relationships with hospital management and the MOHS. The MOHS invited the KHP to the preparedness and contingency planning meetings, which started in March 2014 when EVD cases were recorded in Guinea.²⁰ The MOHS also entrusted the KHP to lead the Connaught Unit EHU response once the unit had been established. Relationships were also quickly built with RSLAF, a key partner and unsung hero of the EVD response in Sierra Leone.²¹

5.3 Moving quickly from 'development' to 'humanitarian' programming

Being present on the ground allowed the King's team a deep contextual understanding and awareness of the skills and resources available, where the local supply chain could be depended upon, and how to interact with it. However, since the KSLP was not used to being at the frontlines of an emergency, it was slow to shift from a 'development' to 'humanitarian' mind-set. Staff noted that, in retrospect, resources should have been mobilised much faster. Other lessons learnt were that bureaucracy should have been reduced, non-critical activities at the hospital suspended, and a different form of communication and relationship, more adapted to humanitarian work, adopted.²²

5.4 Focusing on both long term objectives and real-time learning

KSLP was established to build the technical capacity of individual HCW and their institutions by leveraging the technical expertise of KHP. The partnership approach includes deploying long-term medical volunteers to work alongside local colleagues. The partnership was successful in creating an effective response to the epidemic whilst maintaining essential health services and staying true to long-term training and capacity building objectives.

The partnership focussed on long-term and sustainable solutions from the outset of the outbreak. For example, EHUs in most hospitals were set up as temporary measures and are now closed. By contrast, the Connaught EHU remains in use as a permanent facility to train local health workers. Since EHUs are adaptive and multifunctional, the newly refurbished Connaught unit is set up for EVD care or for isolation and screening of other potential disease outbreaks, such as cholera or the lassa fever.²³

Sierra Leone's post-Ebola recovery plan also includes building institutional resilience in areas of WASH, IPC and general hospital management. KSLP is now an established MOHS partner and will assist in achieving these priorities. The partnership also has plans to assist the Hospital in creating a 'Centre of Excellence' in Infectious diseases, which will be a hub for healthcare, education and research.

¹⁹ Johnson et al. 2016.

²⁰ Johnson 2014

²¹ Lado, 2017

²² Johnson et al. 2016

²³ Thomas 2017

6. References

- Brown, C et al. (2016) 'Ebola and Health Partnerships, Action in a Time of Crisis'. <http://www.intechopen.com/books/ebola/ebola-and-health-partnerships-action-in-a-time-of-crisis> (Accessed 17 November 2016)
- Fantz, A. (2014) 'For Ebola caregivers, enormous fear, risk and bravery' *CNN*. <http://edition.cnn.com/2014/10/12/health/ebola-health-care-workers/> (Accessed 5 January 2016)
- Johnson, O. (2014). 'The Eye of the Storm: Ethical Challenges at the Front Line of an Ebola Outbreak'. *KSLP website*. <http://kingsinthe field.blogspot.co.uk/2014/06/the-eye-of-storm-ethical-challenges-at.html> (accessed 5 January 2016)
- KSLP (2016) 'KSLP Ebola Response' *KSLP website*. <http://kslp.org.uk/about-kings-sierra-leone-partnership/ebola/> (accessed 12 January 2016)
- Johnson, O et al. (2016) 'Ebola Holding Units at government hospitals in Sierra Leone: evidence for a flexible and effective model for safe isolation, early treatment initiation, hospital safety and health system functioning', *BMJ Global Health*. <http://gh.bmj.com/content/1/1/e000030> (Accessed 17 November 2016)
- WHO and MOHS (2014) 'Clinical Management of Patients in the Ebola Treatment Centres and other care centres in Sierra Leone: a pocket guide' *Interim emergency guidelines: Sierra Leone adaptation of the WHO generic*. Ministry of Health and Sanitation. <http://imaiimci alliance.org/documents/Sierra%20Leone%20Ebola%20Treatment%20Center%20pocket%20guide%20December%202014.pdf> (accessed 14 January 2016)

Annex 1: Key informant interviews

Name	Organisation and role
Suzanne Thomas	Education Manager, KSLP
Dr Marta Lado	Consultant in infectious diseases, and lead of clinical team at Connaught