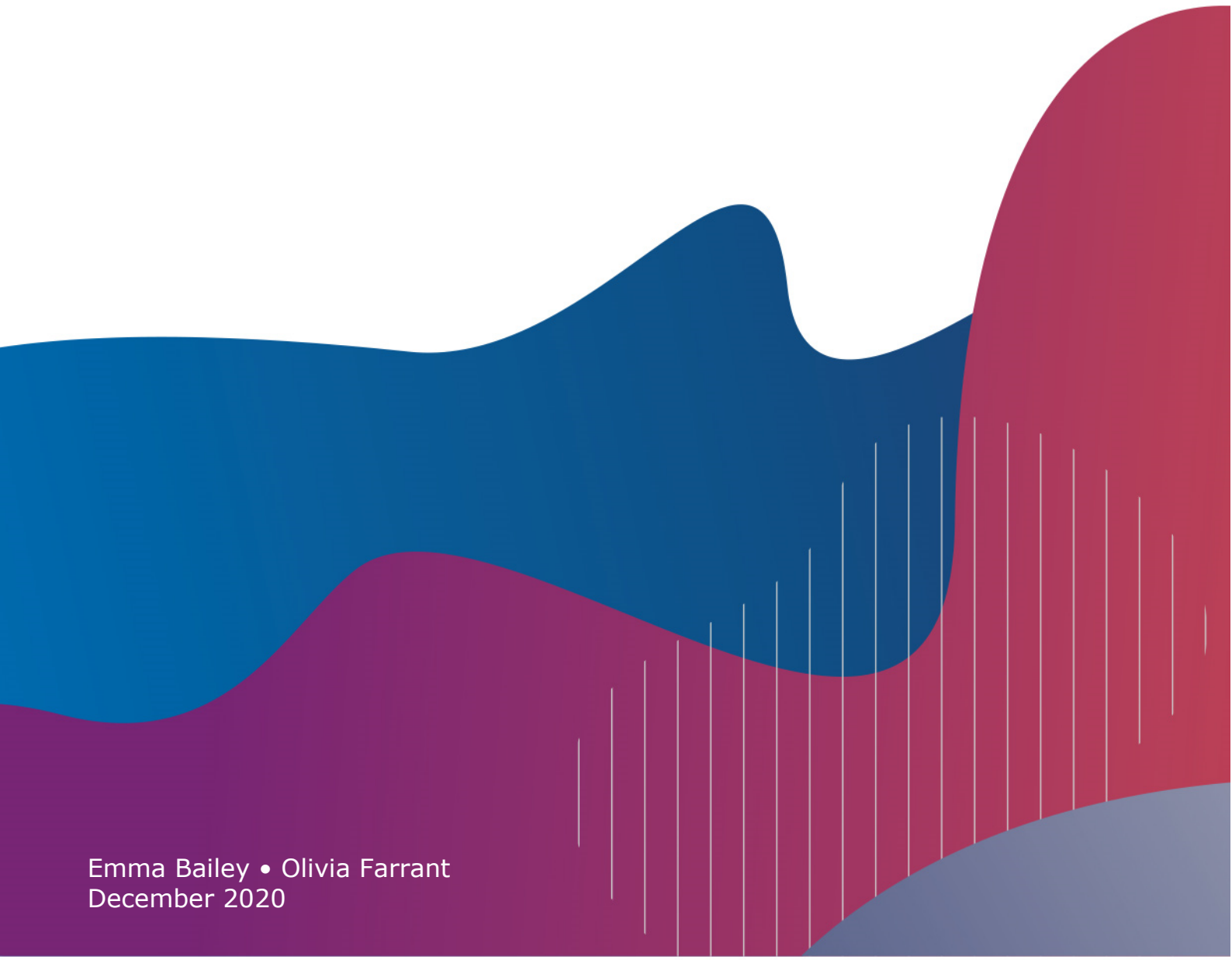
King's Global Health Partnerships

Responding to Covid-19:

Reflections from the King's Sierra Leone Partnership



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Summary

This paper reviews the work of King's Global Health Partnerships during the Covid-19 outbreak in Sierra Leone from February 2020 to late September 2020, when the country faced the highest number of cases. It provides insights into the development of the national and facility level responses; explains the challenges encountered; and highlights where activities were valuable, impactful and why. We hope that our learning will be useful for health partnerships like ours, international NGOs and policy makers and may inform responses to future pandemics. Although this was a very different experience from the Ebola outbreak in 2014, there are also some parallels. The key lessons we have distilled are as follows:

1. Fast and flexible funding in a health crisis saves lives.
2. Mitigating the impact on essential health services requires planning and additional resource.
3. There is an ongoing need to strengthen connections between health facilities and the surrounding communities.
4. Communication across the health system, connecting facilities to national level decision making was critical to the effectiveness of a response.
5. Simple adaptations to health facilities can enable the safe management of Covid-19 in the future and benefit the care of patients with other infectious diseases.
6. Progress towards Universal Health Coverage is urgently needed and would lessen the financial impact of care-seeking on the poorest.
7. For external organisations providing support, relationships built on trust, respect, and active listening matter in times of crisis.

The early days of the Covid-19 response

Kings' and Connaught Hospital staff from the Infectious Diseases Unit before the outbreak

The first cases of Covid-19 were identified in China in late December 2019. In response to the impending global crisis, the Government of Sierra Leone introduced public health measures in mid- to late March, including mandatory quarantine of travellers, the closure of national and international borders, the closure of schools, and the declaration of a national state of emergency for a 12-month period.

The first confirmed case of Covid-19 in Sierra Leone was identified on 23rd March 2020 in a returned traveller as part of routine quarantine testing. The second confirmed case on 1st April was a healthcare worker, who had no direct contact with the first case. The fact that the second case had no epidemiological link with the first case and had not travelled abroad raised legitimate concerns about potential community transmission of the virus at a very early stage.

Over the first few weeks of the epidemic there were a small number of confirmed cases each day. The number of laboratories with trained staff and testing capability was low. In the first month there were also legitimate concerns about a shortage of Covid-19 testing kits, with many kits being used to test asymptomatic contacts or people in quarantine homes, with no clear plan for large scale procurement of

further kits. In response to this, the King's team drafted a 'no test scenario' guideline (1) for syndromic management in the event of limited or no diagnostic tests. This was discussed at the national level and was subsequently published in the International Society Infectious Diseases online repository for low-income settings. Fortunately, the guideline did not have to be used, however, it was useful for sparking debate and informing table-top planning exercises. As the weeks progressed, governments and donors provided test kits, five laboratory sites nationwide were prepared, staff trained, and protocols were designed and disseminated.

The World Bank approved a $7.5 million grant in early April for the Covid-19 response in Sierra Leone, however disbursement and decision making around spending priorities were slow. In many ways, this felt like a repeat of the Ebola outbreak six years earlier. Many early activities, such as set up and equipping of quarantine, isolation and treatment centres; provision of medical care to positive cases; and public health messaging, had to be subsidised by a variety of methods. These included redeployment of existing staff, recruitment of volunteers, out of pocket payments by staff, NGOs shifting their focus, fund reallocation and local charitable group efforts.

The national response: building on the legacy of the Ebola outbreak

At the national level, infrastructure established to respond to Ebola was revived. The Emergency Operations Centre (EOC) was established by the UN in 2015 to ensure coordination among the key pillars of the Ebola response. The EOC had been used as a base for disease surveillance teams since the Ebola outbreak and was re-organised to become a National Covid-19 Operations and Response Centre (NACOVERC), comprising the following pillars.

1. **Case Management**: responsible for management protocols, opening and organisation of Coronavirus Treatment Centres (CTCs), Community Care Centres (CCCs), Covid-19 isolation facilities and the transfer of suspected cases. King's Global Health Partnerships (KGHP) seconded a staff member to the CMP full-time who played an integral role in the strategy and management of the response from a clinical perspective.
2. **Laboratory**: responsible for COVID-19 testing.
3. **Surveillance**: responsible for information gathering on tested patients, dissemination of results and contact tracing.
4. **Risk Mobilisation and Communications:** responsible for developing and publicising public health messages on a number of platforms (social media, radio, TV, jingles, banners/posters,)
5. **Drugs and Medical Supplies**: responsible for procurement, storage, allocation, downstream transport of items to facilities and management of donor items.

6. **Food and Nutrition**: responsible for provision of meals for those at CCCs and CTCs, addressing special nutritional needs i.e. New-born/paediatric/immune-compromised patients.
7. **Burial Teams:** responsible for family education around burial/ funeral practices and safe burial of Covid-19 positive patients.

As the response gathered pace, other pillars, such as Infection Prevention and Control (IPC) and Psychosocial Support were added.

The Case Management Pillar (CMP) was responsible for the set-up and organisation of facilities to treat Covid-19 patients and the transfer of patients between isolation, quarantine, and treatment centres. Covid-19 isolation units or rooms were set up at the main health facilities, including Connaught hospital, for the safe isolation of suspected cases awaiting testing for Covid-19. Once the Covid-19 result was known, negative patients were discharged back to the main health facility and positive patients were transferred either to a Community Care Centre (CCC), or a Coronavirus Treatment Centre (CTC). There was an understanding that most patients who were Covid-19 positive but asymptomatic or pauci-symptomatic (approximately 80% of cases (2)) would be unable to self-isolate at home, due to overcrowded living conditions in many households in Sierra Leone. In response CCCs were opened across the country using converted university halls of residence, army barracks and school sites, installing staff to provide medical and nursing cover. CTCs were opened for the treatment of confirmed Covid-19 patients with severe symptoms, who required hospital-level medical care. This started with an approximately 15-bed specialist unit at the military hospital in Freetown and expanded out to multiple facilities to include 650 beds nationwide by June.

There were bi-weekly updates to the rest of the pillar (including clinicians, UN and NGO partners nationwide) with good communication proving crucial for knowledge sharing in such a rapidly changing landscape. The mobilisation of CCC and CTC set-up was impressive given the severely limited resources and delays in other pillars with related responsibilities. The King's staff member seconded to the CMP full-time was integral to this process.

Covid-19 isolation facilities (such as the one at Connaught) were not included under World Bank funding, therefore all treatment and care received at the hospital (apart from Covid-19 testing) was paid for out of pocket by the patient. King's used donations from UK fundraising to procure vital signs equipment, infection prevention items, cleaning materials and other basic equipment to ensure that the IDU was a safe place for admissions. Calls for donations from Sierra Leonean charitable groups, such as the 'Covid19 dignity project' were also instrumental in bridging the gap by providing items to equip isolation centres and providing care to suspected Covid-19 patients in isolation.

In a setting like Sierra Leone, the public health approach taken in a high-income country to limit the spread of the virus could not be replicated. Full lockdowns in a country where much of the population survive on informal daily earnings, and do not have the resources to either buy or store enough food for two weeks, would have been disastrous. There were instead two 3-day lockdowns in April and May, seen widely as a political gesture with little impact on viral transmission. Advice regarding social distancing and hand washing was disseminated as the main public health approach, with mass gatherings, including religious ceremonies banned until further notice. This was an important step, but due to the overcrowding seen in many of the informal settlements, in Freetown especially, social distancing was thought not to be possible for many people. The last public health measure to be put in place was mandatory mask wearing in public places, which came into effect on the 6th July with varying degrees of enforcement by police.

The Epidemic curve: waiting for the surge

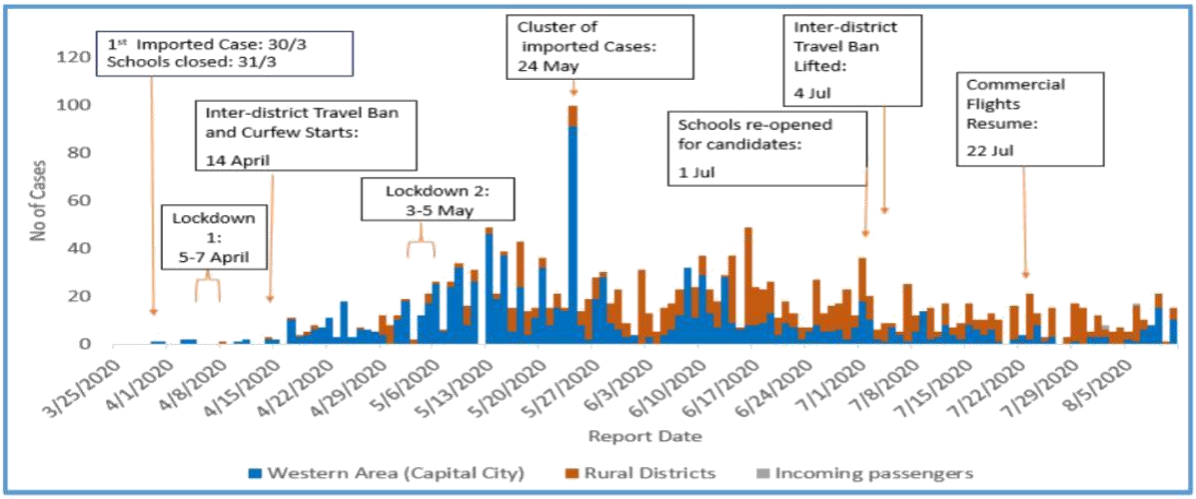

Figure 1: Daily COVID-19 Cases in Sierra Leone as of 11th August 2020; Western Area includes Urban and Rural; Rural Districts includes all other 14 Districts

Between 23rd March and 22nd August, there were 1,980 confirmed cases of COVID-19 in Sierra Leone, with 69 deaths. Figure 1 shows the epidemic curve in Sierra Leone until 11th August (3). The figure is taken from a Covid-19 situation report developed by the Sierra Leone Ministry of Health and Sanitation (MOHS) in collaboration with the World Health Organisation (WHO). The epidemic was expected to show an exponential rise in cases as it had in other countries, with a reproduction number (R0) of around 2.2-3.5 from early data from China (4). However, as Figure 1 shows, this 'surge' in cases never happened, with the country reporting 20-40 positive cases nationwide per day.

It is important to interpret these official figures in context. First, health seeking behaviour is extremely variable in Sierra Leone and is affected by your income, where you live and your health beliefs. Anecdotal reports from the community

suggested that people with mild respiratory infection were attributing their symptoms to malaria, not to Covid-19. A case of malaria would not usually warrant an adult attending hospital. Therefore, it is likely that the official figures are an enormous underestimation. For example, modelling studies done by Imperial College in May suggested there had been 19,448 infections (95% CI: 17,740-21,156) from April 10th– May 10th (5) compared to the official figure at that time of 338 confirmed Covid-19 cases (6). These modelling studies are extrapolated from the number of official deaths, which was also likely to be vastly underestimated. There is no official death reporting in Sierra Leone and many families choose to bury their relatives in their village without official death certification because of the fees associated with this. Although there was no clear evidence of a large rise in community deaths, this information would be hidden from official figures. Furthermore, because of variable health seeking behaviours and the low confidence in government hospitals, people tend to present extremely late to facilities. In Connaught hospital, people regularly died within an hour of admission, too unwell for any medical treatment to save them. In mid-April, the surveillance team stopped swabbing people after they had died, contributing to this vast underestimation of the death rate.

There has been much discussion as to why the number of severe cases did not rise exponentially in Sierra Leone. In March, the King's team was advocating at national level for the rapid opening of several hundred isolation beds, with the assumption that the hospitals would be inundated with severe cases needing oxygen. It is possible that Covid-19 has been widespread but has not manifested as severe disease among Sierra Leone's younger population. Enhanced T-cell immunity in this population (7) may also be a factor. There is limited prevalence data on hypertension and diabetes in Sierra Leone, key risk factors for severe Covid-19 disease. Prevalence is thought to be in excess of 40% (8), and both conditions are commonly uncontrolled due to the poor access to healthcare.

Supporting simple and effective measures

Staff planning and communication: King's has been working in partnership with Connaught Hospital, the main tertiary referral centre in Sierra Leone, since 2013. In February, when the reports of the global spread of Covid-19 were confirmed, we worked with hospital staff to set up a Covid-19 response task force. The task force was multidisciplinary — made up of the Heads of Department from across the hospital — including administration and finance, porters, cleaners, screeners, security and clinical staff. The initial discussions focused on how to continue hospital services and the changes that needed to be made. The committee met once a week to discuss progress and a weekly summary update was disseminated.

Knowing that a lack of transparency was cited as the key reason why staff stopped coming to work during the Ebola epidemic, we developed a daily 'Connaught SitRep' which was disseminated by Whatsapp. This outlined how many patients were

admitted to the Infectious Diseases Unit (IDU), how many were positive and how many were negative. This simple communication was very much appreciated by staff at the hospital.

Patient Screening: Working with hospital staff, we designed processes to keep the hospital safe so that essential services could continue. The process of identifying a suspected case was carried out by a team of screeners, who were based in the front of the hospital and screened every person entering the hospital with a temperature probe. Every patient entering the hospital was assessed with a simple screening algorithm. Once identified, a suspected case was taken to the Infectious Disease Unit

A patient is screened with a temperature probe before entering the hospital

and admitted for assessment and Covid-19 testing. This process meant Covid-suspected patients meeting the national case definition did not enter the hospital or encounter any staff members who were not wearing personal protective equipment (PPE).

The other two main hospitals within the University of Sierra Leone Teaching Hospitals Complex, the Ola During Children's Hospital and the Princess Christian Maternity Hospital did not put these measures in place early enough and were forced to close for extended periods, with staff forced to self-isolate after Covid-19 positive patients were identified in the main hospital. Although there is no data on the impact of this interruption in health services, it is likely to have been considerable.

The Covid-19 screening form was the simplest but possibly most impactful change supported by King's and meant that Connaught hospital never closed. The screening algorithm was disseminated to other facilities in Freetown and became the standard tool for screening at a number of sites, with other facilities modifying it to meet their specific needs. The screening tool was adapted early on to include an oxygen saturation measurement, which enabled us to identify a number of patients who were exhibiting no specific symptoms, but had low oxygen saturation and later turned out to be Covid-19 positive.

Covid-19 isolation unit: The Infectious Diseases Unit (IDU) at Connaught was transformed into the Covid-19 isolation unit. Purpose-built to manage cases of Ebola (a contact-transmission, infectious disease outbreak), the unit needed to be converted to prevent nosocomial transmission of a respiratory pathogen spread by droplets. We reduced the number of beds from 12 to 10 and introduced strict isolation procedures for each bed space. This was a crucial step as it gave doctors the confidence to refer patients to isolation, and patients' peace of mind, knowing that they were protected. Admission and management protocols were drawn up to ensure that patients received a standardised treatment package. The protocols ensured that every patient was tested for malaria, HIV and TB if they met criteria which can all present in a similar way to Covid-19, and for which diagnosis and treatment are free.

Providing adequate clinical support and mentoring in the IDU was challenging for us, given the lack of international donor support and the small size of the King's clinical team, just two staff – Clinical Lead Emma Bailey, a nurse, and volunteer Olivia Farrant, a junior doctor with an interest in infectious diseases. Fortunately, there was an exceptionally committed and talented group of four Sierra Leonean junior doctors, who volunteered to work at the IDU throughout the epidemic. In addition, King's team members from a Comic Relief-funded programme were re-deployed to support Covid-19 efforts including, running Covid-19, IPC and PPE training sessions for over 250 staff members; gathering data on mortality and morbidity; supporting patients to access non-Covid-19 care during the epidemic, and providing care packages and psychosocial support to patients isolated in the IDU, and to their families.

Psychosocial support: The need for psychosocial support was one of the greatest challenges for both patients and healthcare workers. Caring for a patient in isolation is never easy and exerts an enormous psychological toll on both patient and healthcare worker. In response to this we developed patient information leaflets; designated a patient hotline to phone for information, provided 'patient care bags'; and spent time supporting relatives of admitted patients. It is difficult to measure the impact of these activities but considering the low rate of abscondment from the unit, a key challenge during the Ebola outbreak, it was likely beneficial.

Items contained in 'patient care bags' provided to destitute patients

The critical importance of oxygen

We knew early on that oxygen was the single most important intervention needed for patients with severe Covid-19. The oxygen factory at Connaught Hospital, the first of its kind in Sierra Leone, was funded in 2015 by the UK Department for International Development (DFID) working in partnership with King's. It has continued to provide piped oxygen to the Intensive Care and Accident and Emergency units, and via cylinders to the rest of Connaught and other hospitals in Freetown. The Covid-19 Treatment Centre at 34 Military Hospital was identified as the priority for engineering works with the ambition of providing piped oxygen to all treatment centre beds. This work was completed with King's support on 21st May, achieved through a multi-team collaboration with funding from DFID.

Oxygen cylinders at Connaught Hospital

We would also have liked to provide extended piped oxygen to the IDU at Connaught Hospital, but this proposal was not funded. We treated 248 patients in the IDU over a 5-month period, 94 of whom tested positive. In the first months of the pandemic, Connaught had the largest isolation unit in the country and typically received the sickest patients. Patients with severe Covid-19 routinely had an oxygen requirement of more than 10L per minute and in any other setting would have been intubated and ventilated in ICU. There is extremely limited capacity for this in Sierra Leone, with CPAP (Continuous Positive Airway Pressure) being the highest level of care available in the ICU at Connaught, but only when piped oxygen is available, which it is not in the Infectious Diseases Unit.

Ventilators were procured and donated to the government early in the epidemic – before this there were a total of five nationwide which were used only for anaesthesia during surgery. However, without the necessary anaesthetic drugs, oxygen, trained nurses, and anaesthetic support the use of ventilators was not a viable option. In the IDU, we had 5L or 10L oxygen concentrators, limited by their requirement of a continuous power source, or an oxygen cylinder if the patient is requiring more than 10L. However, if the patient was on 15L oxygen per minute, the highest flow rate for someone spontaneously ventilating (breathing on their own), the cylinder would run out after an hour. Trying to keep the cylinders re-filled 24 hours a day for multiple patients required continuous support from the maintenance team at the oxygen factory, was too demanding, and many patients died as a result. Power cuts also posed a daily challenge.

Research led by our colleague, Andy Leather, and published in the Lancet Global Health shone a spotlight on the paucity of oxygen availability in Sub-Saharan Africa (9) – a topic neglected in the Global Health literature.

Working in partnership: where opinions differ

Working in partnership is critical to the success of our longer-term approach to strengthening health systems. In an emergency, we consider it important to follow the same partnership principles, which is perhaps what differentiates us from a typical humanitarian organisation. We are privileged to be embedded at Connaught Hospital and decisions are made jointly with the Connaught team. Listed below are some of the approaches that we considered, but which did not garner significant partner support and were therefore not taken forward:

Annexe opening: Extensive planning and costing was done to prepare for the opening of another 50 isolation beds in the private wing of Connaught Hospital to cope with overcrowding at the IDU and other isolation facilities. These beds would have given a larger number of patients access to piped high flow oxygen. This idea was not supported by hospital management and few senior heads of department for fear of Connaught being classed as a 'treatment centre' at a time when there was a high mortality rate within the IDU. Without increased access to hazard pay, staffing would have been a challenge.

Triage tent/waiting bay: This idea was discussed multiple times as a way to alleviate overcrowding at the main screening area and to allow emergency treatments to be given when IDU beds were full and patients were waiting for diversion to another facility via ambulance transfer. Staffing, equipment, drugs, ownership/responsibility, and the concern that patients would hold a negative perception of a 'tent' were considered obstacles.

Re-opening specialist out-patients department: The specialist outpatient department was shut at the very start of the epidemic due to concerns about vulnerable patients with long-term conditions being put at risk of Covid-19. The team was unable to garner clinician consensus across the hospital due to fears about lack of PPE and personal safety, with many clinicians remembering the multiple deaths that occurred amongst healthcare workers during the Ebola epidemic all too recently. Thankfully, TB and HIV services remained open throughout the epidemic, with changes to medical supply schedules to reduce the need for hospital appointments, but large sections of the specialist outpatient's department were closed for 8 months, with an untold impact on the management of patients with non-communicable, chronic conditions.

Safe surgery: Two prominent surgeons very sadly died of Covid-19 during the epidemic, causing a ripple of panic across the hospital. Support was offered to

develop risk assessment/reduction strategies, protocols and training on safe surgery during Covid-19 by Kings, however, the Head of Department was concerned about the lack of PPE and safety of staff, so adult surgical services were closed for approximately 8 weeks.

The health partnership model: the role of UK health professionals

In April, the Kings Global Health Partnerships' team began to organise a weekly Covid-19 advisory group, bringing together our teams working in Sierra Leone, Somaliland and DR Congo, together with UK-based epidemiologists, Infectious Diseases specialists, IPC specialists, respiratory physicians, and strategists, some who were engaged in the NHS response. Many of these professionals had been engaged in our work previously.

The weekly meeting provided the opportunity to discuss the rapidly evolving evidence base, the limitations of the setting and how best to consolidate resources. As a small team, it was invaluable to have this support. We discussed everything from the clinical aspects (CPAP, palliative care, chest physiotherapy techniques), to the lessons learnt during Ebola (how to engage the community, prioritise psychosocial care), to the epidemiology of the epidemic (when to move on from the containment phase based on the available evidence).

We discussed the lessons emerging from the UK, at that time ahead in its epidemiological curve, around how to balance public health messaging to reduce social contact, whilst encouraging people to attend hospital if they are sick. We decided to use pre-existing funding to employ two communications officers – one international and one national to promote Connaught services, tell stories of survivors and those admitted to the IDU, and develop more external communication, with a view to influencing international development policy and funding priorities.

Barriers and challenges to the response

Controversy over use of funds and strike action: Working in an under-funded health system with limited resources during an epidemic is challenging. Although the response to Covid-19 in Sierra Leone was swift and efficient in some ways due to the previous experience of Ebola, it was hampered by a lack of financial resources. There were two significant controversies to do with government allocation of funds which had a negative impact on the response. One was related to government spending almost 20% of the Covid-19 budget ($850,000) on 4x4 cars and motorbikes for the Emergency Operations Centre (10), the second was the payment of $45,000 for the transport of a free donation of herbal medicines for Covid-19 from the Madagascan government. These controversies occurred at a time when we did not have basic resources in the isolation and treatment units. The impact on staff morale was extremely damaging and was seen as one of the key

reasons for the nationwide strike action which began on 1st July. The strike action caused a major dilemma for us as an organisation because, on the one hand, our role is to optimise and provide patient care, and on the other, to support the health system as a whole and in particular, healthcare workers. We held many discussions and made the difficult decision that King's would not step in to provide clinical care during the national strike action. This meant the IDU was closed for six weeks, and suspected patients were transferred to an isolation unit run by military personnel during that time.

Another key reason for the strike action was the non-payment of hazard pay promised in March to all healthcare workers who were working in the Covid-19 response. An enormous amount of money — almost five times a normal monthly salary for a nurse — was promised monthly but had only been partially paid in July. It was challenging for the King's team to maintain neutrality and encourage the standard of care that patients deserved during this time in the context of extremely low morale among healthcare workers.

Availability of drugs and consumables: In Sierra Leone, healthcare for adults outside of specific categories (pregnant women, Ebola and mudslide survivors, those with a disability or those considered destitute) relies on out of pocket payment. All patients admitted to the IDU must pay for their own treatment — drugs, cannulas, giving sets, oxygen delivery equipment — before treatment is given, even in critical situations. Only Covid-19 testing was delivered free of charge. We received several donations from private funders locally during this time, which helped to alleviate this problem, but it is hard to provide clinical care without the resources you need. This was particularly challenging when the decision to fund the Connaught oxygen expansion proposal was consistently delayed, knowing the huge positive impact that it would have made. Thankfully, we did not run out of PPE at the IDU, which was a key concern. Connaught stores prioritised supply to the IDU to the frustration of other departments. The focus of resources on the isolation unit meant that the rest of the hospital suffered, with masks and gloves needing to be provided by healthcare workers from personal funds.

Healthcare worker infection: As described above, two beloved and experienced surgeons died at Connaught hospital in April and May, which had an enormous impact on morale. Nationally other healthcare workers sadly died, including nurses and community health officers, often those delivering non-Covid care rather than those in the treatment centres. This led to the decision by the surgeons that all patients must have a Covid-19 test before operations, including before emergency surgery. This resulted in dangerous delays to operations, and an enormous backlog that spilled over to the only other hospital in the country where more complex surgical procedures are carried out.

Expectations of King's and lack of international donor support: Because of the leading role that King's had played during the Ebola outbreak in 2014-15 with the support of large-scale DFID funding, Connaught staff were expecting the same

level of support during Covid-19. It was therefore difficult at times to manage expectations and deal with feelings of frustration or disappointment from the local team when we were not able to deliver because of lack of funds and the size of our team. It was challenging for us to manage our own disappointment and feelings that we were not doing enough.

Key lessons learned

It is currently unclear how the epidemic will further develop in Sierra Leone. It is tempting to think that because of its young population the country will be spared the worst, however, the experience in other African countries indicate that there is no room for complacency.

1) **Fast and flexible funding in a health crisis will save lives:** From our perspective, the main challenges of this epidemic lay in the constraints of having a small team with few resources, and prioritising needs in a fast-changing context. Flexible funding provided to us by King's College London early in the epidemic was hugely impactful, allowing us to increase oxygen capacity at the main treatment centre; prepare the IDU with basic equipment; protect staff through awareness raising and IPC training; and provide care to destitute patients. However, we struggled to secure additional resources from donors in-country or internationally.

2) **Mitigating the impact on essential health services requires planning and additional resource:** We knew from the Ebola response that more people had died from TB, Malaria and HIV than from the disease itself. Had we had more flexible funding available and a larger clinical team, we would have been able to offer more support to the clinical and nursing teams in the main hospital, thereby ensuring that patients and staff continued to feel confident to come to the hospital. We tried to do this through the training of healthcare staff and the daily Covid-19 communications, but it was not sufficient in the context of profound uncertainty.

   Other areas we would have liked to support include: transitioning to telemedicine for non-Covid-19 care, clinic consultations; providing support to smaller facilities feeding into Connaught to prepare and cope with Covid-19 presentations; enhancing mortuary communication and reporting of community deaths; supporting Connaught's management team to take a more active role in the national response so that they could stay involved, consulted and informed.

3) **There is an ongoing need to strengthen connections between health facilities and the surrounding communities:** Another gap that emerged was the lack of relationship that Connaught Hospital has with the patients in its surrounding communities. We would like to support Connaught

to set up a patient advocacy group in the future, thereby creating a direct line of communication between patients and the hospital team so that decision-makers can fully understand the patient journey, attitudes and behaviours. It would likely be beneficial to consider similar roles in other facilities across Sierra Leone.

4) **Communication across the health system, connecting facilities to national level decision making is critical to the effectiveness of any response:** Our strengths as a team were: flexibility with our activities to meet needs on the ground on a daily basis; planning as far ahead as possible in order to be proactive rather than reactive; sharing information from national level discussions to inform facility planning; and feeding information back up from facility to national level – including staff experiences, stock outs, other challenges and realities.

5) **Simple adaptations to health facilities can enable the safe management of Covid-19 in the future, and would benefit the care of patients with other infectious diseases:** If there continues to be no surge in cases, the virus will likely become more holoendemic until vaccination is possible. In this context, to ensure the normal functioning of the healthcare system, the care of suspected and confirmed Covid-19 cases will need to become part of wider healthcare delivery. This would require an isolation room in each health facility to accommodate those waiting for testing. Once confirmed, patients would need to be cared for separately. This infrastructure is not in place in most facilities. If this infrastructure development were prioritised, it would also benefit the care of patients with other infectious pathogens, preventing nosocomial transmission and protecting staff for the longer term.

6) **Progress towards Universal Health Coverage is urgently needed and would lessen the financial impact of care-seeking on the poorest:** Sierra Leone does not yet have a well-functioning and reliable healthcare system. Epidemics like Covid-19 lay bare the enormous cracks in the system that are papered over in normal times: chronic underfunding, weak contingency plans, and few resources. Ultimately there is need for proper funding of the healthcare system through taxation alongside poverty-reduction strategies. Patients having to fund emergency care from their own pockets creates enormous inequality and delays in the delivery of care, and often has wide-reaching, catastrophic effects on an entire family for months, even years.

7) **For external organisations providing support, relationships built on trust, respect, and active listening matter in times of crisis:** Our historic relationship with Connaught Hospital and with national decision makers stretches beyond individual relationships and meant that we were trusted and listened to. We also made it a priority to listen to the diversity of

opinions and needs at Connaught throughout the epidemic. Having a nuanced understanding of the people, the context, and the health system in this type of prolonged crisis makes a world of difference. In addition, our clinical skills, being able to work alongside local staff, not being afraid to don full PPE and role model the importance of safe working practices, and the practical or emotional support we provided, all made a difference to patients. Our gratitude extends first and foremost to our valued Sierra Leonean partners who have worked with us hand-in-hand to plan, prepare and confront this epidemic head on – their dedication and skill are inspiring.

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King's Global Health Partnerships

ABOUT KING'S GLOBAL HEALTH PARTNERSHIPS

King's Global Health Partnerships is an initiative of King's Health Partners. We connect UK and African health professionals, providing training, mentoring and hands-on support; and undertake collaborative research to inform policy and practice. We also support our partners by providing access to funding, networks, and development opportunities. Through long-term partnerships and our global volunteering scheme we promote skills and knowledge exchange, and mutual learning that contributes to building a stronger health workforce and improved quality of healthcare both internationally and in the UK.

The King's Sierra Leone Partnership was established in 2013 and works to strengthen the health system and improve the quality of care in Sierra Leone. In 2014-15, King's played a leading role in the Ebola response, treating 10% of all patients. The King's team is based at Connaught Hospital, the main tertiary referral hospital in Freetown, where we work alongside Sierra Leonean healthcare workers.

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