



Research for stronger health systems post conflict

‘Fighting a battle’: Ebola, health workers and the health system in Sierra Leone

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The ReBUILD Research Programme Consortium is an international research partnership funded by the UK Department for International Development.

ReBUILD is working for improved access to effective health care for the poor and for reduced health costs burdens in post-conflict and post-crisis countries. We are doing this through the production of high quality, policy-relevant research evidence on health systems financing and human resources for health, and working to promote use of this evidence in policy and practice.

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List of abbreviations

CCC	Community Care Centre
CDC	Centre for Disease Control
DERC	District Ebola Response Centre
DHMT	District Health Management Team
DMO	District Medical Officer
ETC	Ebola Treatment Centre
EVD	Ebola Virus Disease
GOSL	Government of Sierra Leone
HRH	Human Resources for Health
IDI	In-Depth Interview
IPC	Infection Prevention and Control
KII	Key Informant Interview
MCH	Maternal and Child Health
MoHS	Ministry of Health and Sanitation
MSF	Médecins Sans Frontières
NERC	National Ebola Response Centre
NGO	Non-Governmental Organisation
PHU	Peripheral Health Unit
PPE	Personal Protective Equipment
WHO	World Health Organization

Executive summary

Introduction

The 2014 Ebola Virus Disease (EVD) outbreak evolved in alarming ways in Sierra Leone. The virus spread to all 14 districts and the country struggled to control the escalating outbreak against a backdrop of a health system that was already weak and over-burdened. Efforts made in the post conflict period to strengthen human resources have suffered a major set-back by the outbreak of Ebola.

There was a delayed response to the outbreak due to a number of factors ranging from governance and leadership, lack of readiness in the health facilities and challenges surrounding human resources for health. There is a need to understand how the health system responded to the 2014-2015 Ebola crisis, from a health workers' perspective. There is a need to unpick the factors that supported or hindered health workers' ability to cope with the crisis, taking into consideration the experiences and perceptions of both frontline health workers and managers. These findings can be utilised in rebuilding the weak health sector in the post-Ebola phase, and for any further outbreaks of this nature as a longer term response.

This project is an extension of the REBUILD health worker incentive project, that explored the evolution of incentives for health workers post conflict and their effects on human resources for health and the health sector.

Objectives

This research project aims to understand the challenges to a responsive and resilient health system from a health worker perspective in the face of the recent Ebola shock, and how to build resilience to such shocks in the future.

The specific objectives are:

1. To understand health workers' experiences of the Ebola crisis, and how it has added to previous challenges which they faced
2. To explore the factors which helped some to cope, while others were unable
3. To develop recommendations based on reinforcing these coping strategies and supportive systems

Methods

This is a retrospective (from the pre EVD outbreak period in 2013 to April 2015) cross sectional study using qualitative research methods. The study was conducted in four districts, which illustrate the effect of Ebola and were also the same districts as those selected for the ReBUILD health worker incentive project. The study districts were: Western Area, Kenema, Koinadugu and Bonthe.

Twenty-five in depth interviews were conducted with frontline health workers including national (capturing senior, mid and low level cadres of health workers) and international health workers (mostly senior level health workers or administrative heads) who worked in Ebola treatment centres and national health workers working in other health facilities. Nineteen key informant interviews with district level managers, including District Health Management Team members, Local Council members, health facility managers and development partners. These interviews explored their perceptions and experiences of EVD outbreak on their work, facilitators and challenges within the health system prior to as well as during the outbreak, their coping mechanisms, and options for strengthening the health system. During March and April 2015, the research team conducted all the interviews in English, face to face, and using topic guides. The interviews were digitally recorded

after gaining permission from the participants. The recordings of the interviews were transcribed verbatim and analysed using the framework approach.

Ethical approach was obtained from the Sierra Leone Scientific and Ethics Committee and the Liverpool School of Tropical Medicine Research Ethics Committee.

Findings

Challenges in the health system prior to the Ebola outbreak

Respondents reported several challenges in the health system. Problems with health care facilities included: being in disrepair making it difficult and sometimes dangerous for health workers to function; no office space to do administrative work; limited accommodation for health workers within the facility compounds. There were difficulties with transport including: lack or poor maintenance of vehicles for referral of patients; lack of functioning bicycles for health workers to carry out outreach work; and poor maintenance of roads so that doing outreach and referring patients is challenging particularly in the rainy season. Challenges around health workers included: inadequate numbers of health workers particularly in peripheral health units and remote areas; delays in receiving allowances; and limited in service training.

Readiness of the health system and health workers to manage the outbreak

Specific challenges related to readiness of the system to manage the Ebola outbreak were reported. These included: a lack of triage facilities, of isolation and treatment beds, of training in infection prevention and control, of protective equipment; limited numbers of laboratories, instruments and supplies; lack of knowledge and misconceptions about Ebola also contributed to fear of the disease and how to protect themselves from infection as well as care for patients.

Response to the Ebola outbreak

Health workers undertook duties during the outbreak for a variety of reasons, including volunteering, being mandated, and seeing it as part of their on-going role. Volunteers, previously not on the payroll, wished to join the staff eventually. For international volunteers, there was a sense of having skills in demand, which was the driving factor. All received training, and the content was seen as adequate, though improving over time (i.e. at first, the content was less developed as the experience of the epidemic was new).

Impact of Ebola on health workers

Respondents reported several negative effects on health workers. They included: a breakdown of trust between neighbours /communities and health workers resulting in a sense of isolation and in some cases being ostracised; health workers no longer trusting patients; isolating yourself from families to protect them from infection; relatives discouraging health workers from working; the trauma of watching colleagues die and fearing for yourself; and economic hardship due to reduced earnings. In the workplace they often reported stress and overload, and a continued struggle to get the supplies they needed, and some reported distrust between staff – for example, between those in general and treatment facilities. Managers were supportive in some but not all cases. On a positive note, some respondents reported improved skills and knowledge in triage, management of Ebola, and infection prevention and control measures through the training workshops and clinical practice.

Coping strategies

There were several strategies that helped health workers cope with working during the outbreak. They included: training helped health workers overcome fear and become more confident about providing care; being given the appropriate equipment to be able to do their job safely; peer, family

and community support; a social media platform helped health workers deal with challenges; workshops that provided emotional support and ways to deal with the social stigma associated with being a health worker; the risk allowance motivated some staff to work in the facilities and provided an additional income source which helped cope with the increased cost of living.

Respondents' recommendations for rebuilding the health system

The respondents' emphasised the importance of re-establishing strong links with the community to regain their trust and involvement. They suggested that health facility committees should be strengthened and the community health staff used more effectively to link communities and health facilities. Some of the infrastructure, such as triage system and isolation units which was created in response to Ebola should now be effectively incorporated in the health system, and the outstanding gaps (such as limited drug supplies) filled. There is also widespread acceptance of the need for better supervision of staff, stronger surveillance systems, regular in-service training, improved working conditions and specific support for families whose members contracted Ebola in the line of duty. The respondents highlight the responsibility of the government to provide a safe health system – safe not just for patients but also staff.

Conclusions

This research is the first study since the Ebola epidemic to solicit the views of a wide range of health staff in four districts on their experiences of the Ebola epidemic, how it affected them, their health system, and their communities. It engaged health managers and staff (paid, volunteers and internationals) working in routine and Ebola treatment centres, and documented their views and experiences not just on the epidemic but also how they coped through it, and what they require in the months and years ahead.

This report documents a very painful period with moving experiences of staff as they continued to try to work and protect their households and communities. At the same time, it is clear that considerable reserves of health worker resilience were found. These patterns of resilience must be reinforced as the sector is rebuilt. Supportive supervision, peer support networks and better use of communication technology should all be pursued, alongside a clear programme for rebuilding trusting relations with community structures.

Health workers are at the heart of the health system, and therefore listening to their voices about what helps them stay and do their job in the midst of a crisis is vital for building a resilient and responsive health system. The challenge is building these coping mechanisms into routine systems, pre-empting shocks, rather than waiting to respond belatedly to crises.

1. Introduction

The 2014 Ebola Virus Disease (EVD, or “Ebola”) outbreak evolved in alarming ways in Sierra Leone. The virus spread to all 14 districts and the country struggled to control the escalating outbreak against a backdrop of a health system that was already weak and over-burdened. The health system has been further weakened by the outbreak and all efforts made in the post conflict era (since 2002) to strengthen the health system and provide equitable access to health care have suffered a major setback. In the recovery phase, it is imperative that efforts should be made to rebuild the current crumbling health system.

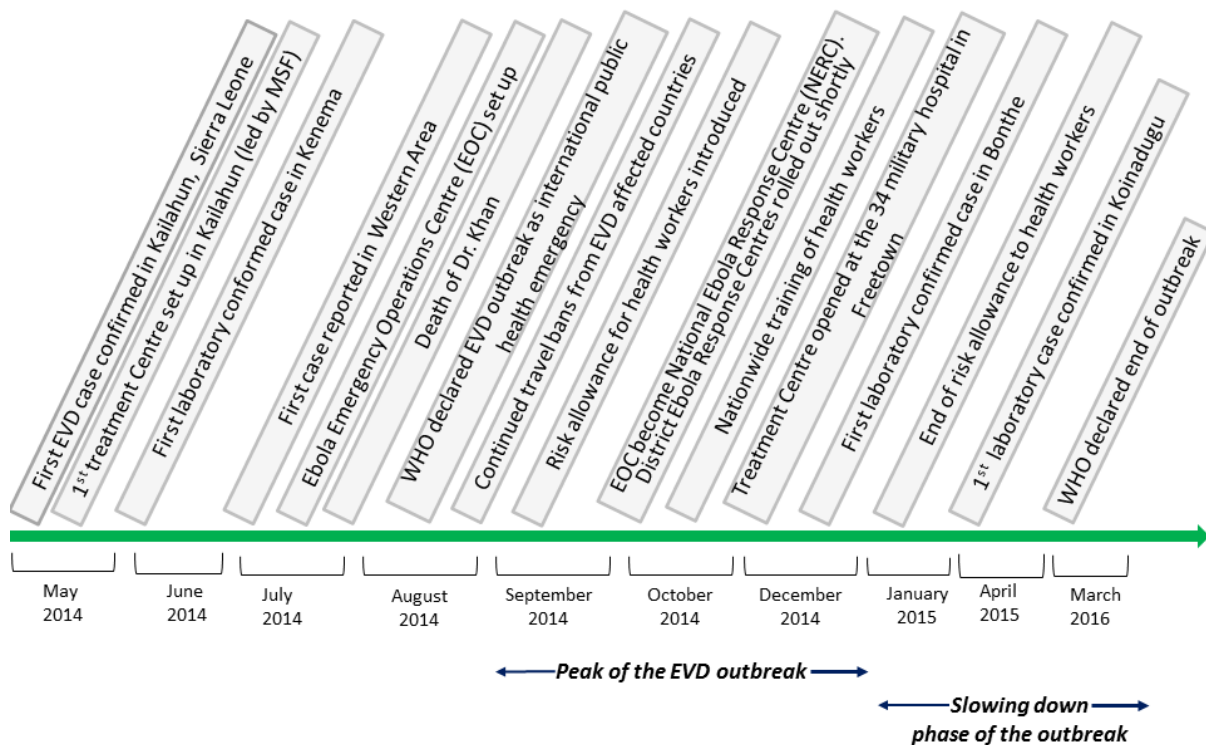
1.1. The EVD outbreak

Despite the growing severity of the Ebola Virus Disease (EVD) outbreak in West Africa, which began during the previous December in Guinea, a “public health emergency of international concern” had not been declared by the World Health Organisation until 8 August 2014. The main responders up until that point, in addition to the affected countries’ health systems, were humanitarian agencies, particularly *Médicins Sans Frontières* (MSF), which tried to attract greater international attention to the growing crisis.

The outbreak led to considerable morbidity and mortality in a very short space of time, exacerbated by weak health systems with inadequate numbers of health personnel, surveillance systems, diagnostic facilities, isolation wards and protective equipment. The health systems of the three main countries affected – Guinea, Liberia and Sierra Leone - were slow to recognise and respond to the crisis before becoming overwhelmed.

Key events during the Ebola outbreak and response activities related to health workers that took place in Sierra Leone (Schieffelin et al. 2015; Wolz 2014; Ansumana et al. 2014; National Ebola Response Centre 2015b; Wang et al. 2015; National Ebola Response Centre 2015a, Wauquier et al 2015, Maxmen, 2015) are displayed in chronological order in Figure 1.

Figure 1: Timeline of EVD outbreak in Sierra Leone



1.2. Sierra Leone Health System

In Sierra Leone the health system is divided into six pillars (leadership and governance, human resources for health, service delivery, health financing, medical products and technology and health information, research, monitoring and evaluation) guided by the WHO health systems building blocks (Government of Sierra Leone 2009), and the outbreak has highlighted the gaps and challenges in all six pillars which contributed to the delayed response.

The health systems pillars are interconnected and serve as the foundation to having a responsive and resilient health sector in the face of a health crisis such as the current Ebola outbreak. One of the most important pillars of a responsive and effective health system is an effective workforce (WHO, 2006).

Understanding the post-conflict dynamics of human resources for health in Sierra Leone was the basis of the ReBUILD research consortium's 'health worker incentives in Sierra Leone' project. Findings from this study have highlighted that building the capacity of health workers and developing a motivated health workforce is an on-going issue (Wurie and Witter, 2014). In the post conflict era, efforts had been made to strengthen the human resources pillar within the health care delivery sector with a number of reforms implemented (Bertone et al., 2014). Analysis of routine available data showed an increase in the number of health workers, due to a rapid recruitment drive and salary increase in the run up to the introduction of the Free Health Care Initiative. The salary increase had a positive impact on retention, even in the hard to reach areas of Sierra Leone. The data also showed improvements in absenteeism after the implementation of the Staff Sanction Framework and its accompanying attendance monitoring tool (Wurie et al., 2014).

However, efforts made in the post conflict period to strengthen human resources have suffered a major knock by the current outbreak of Ebola (Witter and Wurie, 2014). There is need for health systems research in Sierra Leone to better understand how to strengthen the six pillars and build the foundation for a responsive and resilient health sector working towards providing universal health coverage for all (Wurie, 2014a and b). A recent paper highlighted that a weak health system cannot be resilient and cope with crises such as an Ebola outbreak, and called for “national governments, assisted by external partners to develop and implement strategies to make their health systems stronger and more resilient” (Kieny et al. 2014, p850). ReBUILD’s research into health system development post-conflict in Sierra Leone can provide a good historical basis for understanding the effects of this latest shock on the health system and how existing challenges in the health sector contributed to the delayed Ebola response, which in turn will be useful for developing lessons for post-Ebola reconstruction.

2. Aim and objectives of the research

There was a delayed response to the outbreak due to a number of factors ranging from governance and leadership, lack of readiness in the health facilities and challenges pertaining to the human resources for health. There is a need to understand how the health system responded to the 2014-2015 Ebola crisis, from health workers’ perspectives. There is a need to unpick the factors that supported or hindered health workers’ ability to cope with the crisis taking into consideration the experiences and perceptions of both frontline health workers and managers. These findings can be utilised in rebuilding the crumbling health sector in the post- Ebola phase, and for any further outbreaks of this nature as a longer term response.

This project is an extension of the REBUILD health worker incentive project, that explored the evolution of incentives for health workers post conflict and their effects on human resources for health and the health sector (Witter et al. 2012).

This research project aims:

To understand the challenges to a responsive and resilient health system from a health worker perspective in the face of the recent Ebola shock, and how to build resilience to such shocks in the future

The specific objectives are:

1. To understand health workers’ experiences of the Ebola crisis, and how it has added to previous challenges which they faced
2. To explore the factors which helped some to cope, while others were unable – personal as well as systemic factors
3. To develop recommendations based on reinforcing these coping strategies and supportive systems

3. Methods

3.1. Study design and research methods

This is a retrospective cross sectional study using qualitative research methods. The timeframe for the retrospective data collection was from the pre EVD outbreak period in 2013 to April 2015, when the interviews were conducted. As the outbreak was slowing down with few new Ebola cases at this time, this was seen as an appropriate time to conduct the study. This timing allowed for some space for health workers and managers to participate in the study, enabled a vivid picture of the situation for health workers and managers to be created, and researchers to safely conduct the research.

In order to meet the stated objectives, the study employed different methods and data collection tools:

In depth interviews (IDI): Conducted with frontline health workers including national and international health workers who worked in Ebola treatment centres (ETC) and national health workers working in other health facilities. The specific objectives were

- To explore health workers' perceptions and experiences of the EVD outbreak in Sierra Leone and the impact of the Ebola outbreak on health workers
- To identify any facilitators, constraints, challenges and coping mechanisms, in relation to leadership and governance, HRH and service delivery
- To explore options to increase the resilience of workers and the health system as a whole in future

Key informant interviews (KII): conducted with district level managers, including District Health Management Team (DHMT) members, Local Council members, health facility managers and development partners. The specific objectives were:

- To explore key informants' perceptions and experiences of the Ebola outbreak, in particular the impact on health workers
- To identify the constraints, challenges and opportunities in relation to leadership and governance, HRH and service delivery during the Ebola outbreak
- To explore options to increase the resilience of workers and the health system as a whole in the post Ebola phase

3.2. Study sites

The Ebola outbreak affected all the districts in Sierra Leone, some more than others. Four districts were selected from the four regions of Sierra Leone to illustrate the range of effect of Ebola. The selected study districts were the same as those selected for the ReBUILD health worker incentive project, as they represent different regions of Sierra Leone with different timing and extent of outbreak, relationships with district and facility managers made it easier to conduct the study, and it allowed us to build on existing findings. districts were:

1. Western Area (Urban/Rural) District – high numbers of EVD patients and epicenter during the outbreak
2. Kenema District (Eastern Region) – high numbers of EVD patients and epicenter during the outbreak
3. Bonthe District (Southern Region) – low numbers of EVD patients
4. Koinadugu District (Northern Region) – hit by Ebola in the later stages of the epidemic, no treatment centre, hard to reach

3.3. Sampling methodology and size

3.3.1. In depth interviews with health workers

For the IDIs, four groups of health workers were selected, as described below. A total of 25 health workers were interviewed, comprising of 10 male and 15 female health workers. Table 1 provides details of health workers by district, and table 2 gives a breakdown of the cadres of health workers included in the study. For a more detailed list of health workers see appendix 1.

1. *Health workers who were interviewed for the ReBUILD health worker incentive study* we followed up as many as possible of the 23 participants included in the health worker incentive study (Wurie & Witter, 2014). Even when not available for interview, we tried to document their current status, where possible.
2. *National health workers working in ETCs or isolation centres:* we selected 2 health workers working in each centre in the most hit study districts, Western Area and Kenema.
3. *National health workers working in other health facilities:* we selected 2 health workers working in a district hospital and community health centre in each study district. This group allowed us to understand the wider effects of EVD, beyond the specific ETCs.
4. *International health workers working in ETCs or isolation centres :* we selected international health workers working in the ETCs in the most hit study districts, Western Area and Kenema. These interviews captured the perceptions of outsiders with operational insights on the current functioning of service delivery in the districts. As health workers who have not worked in the Sierra Leone health system, they provide a unique and important perspective on how health workers coped with responding to the outbreak, and ways to rebuild the health system post- Ebola.

Table 1: In depth interviews: numbers, cadres and gender of health workers per inclusion criteria group per district

	Health workers who were interviewed for the ReBUILD health worker incentive study	National health workers working in ETC or isolation centres	National health workers working in other health facilities	International health workers working in ETCs or isolation centres	Total
Bonthe	0	0	2 (Nurse F; CHO M)	0	2
Kenema	1 (Doctor M)	2 (Nurse M; Nurse aid F)	2 (MCH aid F; Lab technician F)	2 (Doctor M; Midwife F)	7
Koinadugu	3 (CHO M; Nurse x2 F)		3 (SECHN F; MCH Aid F; CHA M)	0	6
Western Area	4 (Nurse x 2 F; Nurse x 1 M; Midwife F)	3 (Nurse F; Doctor x2 M;	2 (Midwife F; MCH aid F)	1 (Doctor M)	10
Total	8 (3M; 5F)	5 (3M; 2F)	9 (2M; 7F)	3 (2M; 1F)	25

Key: CHO = Community Health officer; MCH Aid = maternal and child health aid; SECHN = State enrolled community health nurse; CHA = Community Health Assistant; M = male; F = female

Only 2 health workers were interviewed in Bonthe district as there were no Ebola treatment centres or isolation centres in this district, due to the low number of EVD cases reported in this district. In addition, we were unfortunately unable to follow up the health workers who were in the ReBUILD

health worker incentive study, as they were engaged at the last minute in EVD related training, in another district.

Table 2: cadres of health workers included in the study

Cadre of health worker	Number
Community health officers and assistants	3
Doctors	5
Lab technicians	1
Nurses and nurse aids	10
Midwives and MCH Aids	6
Total	25

Of the 23 health workers included in the ReBUILD health worker incentive study, only 8 were available to participate in this study, due to a number of reasons. This included: death, one from EVD; unwilling to participate in the study; health worker now working in a different health facility that is not in the chosen four study districts; and health workers away from their work stations on training at the time of the study.

3.3.2. Key informant interviews

The key informants were purposefully selected for inclusion based on them being a member of the DHMTs or local councils, health facility managers and international partners working in the study districts. They had to have a detailed knowledge of the health system response to the outbreak and be able to provide their perceptions and experiences of the response. A total of 19 key interviews were interviewed (Table 3), of which 13 were male and 6 were female. For a more detailed list of key informants see Appendix 1. The local council representative from Kenema was unavailable to participate in the study.

Table 3: Number, type and gender of key informants by district

District	DHMT	Local Council	Health facility manager	International partner	Total
Bonthe	1 (M)	1 (M)	2 (both M)	1 (F)	5
Kenema	1 (M)	0	2 (1M; 1F)	1 (M)	4
Koinadugu	1 (M)	1 (F)	2 (both male)	1 (M)	5
Western Area	1 (F)	1 (M)	2 (1M; F)	1 (F)	5
Total	4	4	8	4	19

3.4. Data collection for in depth interviews and key informant interviews

The research team conducted all the interviews face to face, from March to April 2015. Separate topic guides were used for the in depth interviews with national and international health workers and key informant interviews (see Appendix 2). The team leader facilitated the interview using the topic guides. The interviews were digitally recorded after gaining permission from the participants. The interviews took place in a private room in the health facility, office or in their home where the participants felt most comfortable. They were all conducted in English.

3.5. Data analysis

The recordings of the interviews were transcribed verbatim. This data was analysed using the framework approach which facilitates rigorous and transparent analysis (Ritchie et al. 2003). The

coding framework was developed using themes emerging from the data, the topic guides and study objectives (see Appendix 3). The research team applied the coding framework to the transcripts, charts were developed for each theme, and these charts were used to describe the themes. Thematic differences between the accounts of respondents by cadre of health worker, gender and district were explored. However, there were few strong differences, but where they have emerged, they are described in the findings. Therefore, we have focused in our analysis on the differences between key informants and health workers. The computer programme NVIVO 10 was used to support the analysis.

3.6. Research Ethics

Ethical approach was obtained from the Sierra Leone Scientific and Ethics Committee in December 2014 and the Liverpool School of Tropical Medicine Research Ethics Committee in January 2015. A number of other research ethics and governance arrangements were in place. Rigorous informed consent process and mechanisms to assure confidentiality in data collection, analysis and storage were followed. All participants were given verbal and detailed written information about the nature and purpose of the research before taking part. Participants were made aware of their right to decline to answer questions, and were assured that measures are in place to anonymise responses where possible. All data were anonymised.

Some health workers and key informants were distressed during the interviews. The interviews were being conducted by a Sierra Leonean researcher who had been working with health workers during the Ebola outbreak. She carefully and sensitively handled the interviews, pausing the interview and allowing time for the participant to regain composure or stop the interview. None of the respondents wanted to stop the interview.

There was also potential for distress for the researchers when they heard and witnessed the challenges faced by health workers. Support for the researchers was provided through: a field work plan that allowed for enough time between interviews, regular debriefing sessions amongst the Sierra Leone team, and regular Skype calls with the UK research team.

3.7. Research Limitations

The interviews were conducted whilst the outbreak was abating. Conducting the study during the height of the outbreak may have resulted in feeding the findings into the on-going response. However, there were important ethical issues that we considered such as interviews putting respondents and interviewers at risk of transmission of Ebola, and interviews detracting from essential work by health workers and managers. We therefore conducted the study towards the end of the outbreak, so that findings could be used to help rebuild a more resilient health system.

4. Findings

The findings are presented in four sections. The first section describes responses concerning the health system prior to the Ebola outbreak, including readiness of the health system and health workers to manage the outbreak. The second section focuses on the response to the Ebola outbreak, including health workers' reasons for participating in the response, training, and leadership and management. The third section centres on the impact of Ebola on communities and health workers, and the strategies adopted by health workers to cope with these effects. The final section describes the suggestions made by key informants and health workers for the rebuilding of the health system, focusing on building trust with communities and strengthening the health workforce.

4.1. Challenges in the health system prior to the Ebola outbreak

In this section we describe findings concerning the challenges in the health system prior to the Ebola outbreak and specifically the lack of readiness of the health system to respond to the outbreak. We focus on two areas: the working environment; and the health workers.

4.1.1. Working environment

Inadequate facilities

Many respondents reported that the poor working environment contributed to low motivation of health workers to provide services.

There were many issues with the health care facilities: facilities were in disrepair making it difficult and sometimes dangerous for health workers to function; no office space to do administrative work; and limited accommodation for health workers within the facility compounds.

"Another thing was we do not have conducive environment for health workers, like in the PHUs there are some health workers who do not have accommodation - if you see where they sleep you will regret it." (KII Bonthe 3, Male)

"So most offices are tight places - not even enough chairs to sit on and tables to do your work, even the computer and the accessories is a big problem" (KII Kenema 2, Male)

"People walk 27 miles to access a PHU (Peripheral Health Unit). We went for supervision two days ago, myself and the DMO (district medical officer) and we saw some of these things. It's really discouraging and erm the infrastructure is poor ... some of our PHUs are, if you see them you will cry. They have no roof, I mean no zinc, they use these thatch ... like farmhouses." (KII Koinadugu 2, Male)

The facilities lacked triage systems, which can help prioritise patient's treatment based on the severity of their condition. In the district facilities, they lacked places to isolate patients with infections before they can be referred. Some facilities used tents for patients who needed to be isolated. There were also insufficient numbers of beds for Ebola patients in Freetown, and staff had to turn people away from the facilities and ask them to return the following day. One key informant from the Western Area reported that there were not enough laboratories to manage all the investigations required for diagnosing and treating EVD.

"There should be a particular system set up just to make sure people are being classified according to their illnesses, but that hasn't been done so the readiness there was no system for that." (KII Bonthe 3, Male)

“There is no place even to er put a patient that is really having a temperature of let’s say 40. We only have three or four rooms, two consultation one er drug store and labour ward...well there is no isolation centre here. No in this PHU we only made an outside tent to isolate patients. It is not standard of course”. (KII Bonthe 2, Male)

“We don’t have treatment centres. There were times in October, November that we had to close the door of the hospital, the main gate because we didn’t have beds in the holding unit and if you don’t have beds to isolate people you cannot. We had people on the floor just vomiting and with faeces everywhere and that was so dangerous. I remember for at least 3-4 times it’s like we had to say people who you knew that they had Ebola that they had to go home. Like go home, come back tomorrow, maybe tomorrow we will have a bed. And that’s a problem of not having beds and not having system.” (KII Western Area 4, Female)

Issues with transport

The problems with transport revolved around: lack of ambulances for referral of patients; lack of functioning bicycles for health workers to carry out outreach work; poor maintenance of vehicles; and poor maintenance of roads so that doing outreach and referring patients is challenging particularly in the rainy season. One key informant explained that this improved during the Ebola outbreak with the DHMT taking more responsibility for transport and the community supporting the improvement of roads:

“I have a very old bike, the maintenance of this bike would not be easy. If I was to go for supervision I would be there for 2 or 3 days, and I (motor bike) would have a breakdown. So the maintenance was very poor, [...] even the road network - the community were not making the roads at all. In the rainy season it would be very difficult to even go over 25 kilometres journey, that would take you many hours. But with the ... the advent of Ebola, people have become sensitive. The DHMT have changed their mandate, now it is NERC or DEC, they ensure that we have mobility that is functional, maintenance on a regular basis and that the community people are on board, bringing in the section chief to ensure that they use the community to improve the roads. Or else you have to go for a burial it will take you 4 or 5 days before you get there.” (KII Koinadugu 5, Male)

Lack of equipment, drugs and supplies

Lack of essential equipment, drugs and supplies were other problems reported. One key informant explained, that without a logistician, ensuring adequate drugs and supplies was very challenging.

“We have challenges - a lot, especially when we had the wrong people to serve in various roles. Say for instance we didn’t have a logistician to request for supplies and make sure they are delivered on time and everything, so we had to step in, we had to regularise everything.” (IDI Western Area, Health Worker, Male, National).

In particular, many respondents reported issues with equipment to protect themselves from contracting EVD. At the start of the Ebola outbreak, there was no personal protective equipment available and many health workers felt that they put themselves at a lot of risk by trying to care for patients with Ebola without sufficient protection. They talked of fighting a battle without equipment. Some health workers explained that they complained about the lack of equipment, and received some protective clothing and goggles. They also lacked enough gloves for basic protection. One health worker explained that he was allocated 2 packets per week, which was grossly inadequate.

“Yeah well the fear was we don’t have enough equipment to work with, especially the protective gears, the gloves, gowns and all the rest of it they were not available. They were supplying us in small quantity and imagine when you want to touch any patients you have to use gloves and if you have been supplied with the gloves, just two packets for a week. It was difficult for us so that made us not to even touch the patient because we are always saying ‘when you don’t have gloves, don’t work’ - that was our slogan. So it was difficult for us those first three months unless when we have so many donors coming in donating gloves and all the rest of it, the work was easier for us.” (IDI Western Area 2, Health Worker, Female)

“You need to have the necessary equipment to fight. What has been the problem is that even when there is this readiness of facing this battle we have not been given the proper equipment to fight. So PPEs (personal protective equipment) are just coming in now and training have been done along that line of, you know, protection - health first, protection and patient protection.” (KII Bonthe 1, Male)

Other health workers reported that they had no chlorine to disinfect facilities, beds and equipment. They would try to buy this using their own money, but it was often unavailable and they had to use “Whitex¹” instead.

“We are not given things. We had to buy like for example chlorine. We will not buy because it’s not easily available but we will buy Whitex. We will use that once we mix and then wash our hands.” (IDI Western Area 1, Health Worker, Female)

Some health workers explained that there were not enough instruments or materials such as Caesarean Section kits or suction catheters and they were either not properly sterilised before reuse, or reused when they should be disposed of. This resulted in both patients and staff being at risk of contracting Ebola, and other diseases.

“I now told them that if you have never processed the instruments correctly, we should do them now because they are in short supply, caesarean section sets are very limited. That is a challenge - there is not enough instruments, suction machine, things that can be used personally on one patient and must be changed sometimes have been reused. And let me tell you, some of our problems about Ebola, was people had to reuse the equipment.” (IDI Western Area 1, Health Worker, Female)

Respondents reported that many of the medications that are needed are not available in the facility. Patients must buy the drugs from private pharmacies external to the facilities. Poor families are unable to afford these drugs. Some health workers reported that they sometimes buy the drugs using their own money.

“One of the challenges is the supply, the medical supply. Sometimes even if you need to admit cases and you need to prescribe for this patient, the medications are not available and the Government is not forthcoming on these medicines. And some of these cases that are coming they don’t have enough money to buy these medicines. Sometimes I have to pay out of my own money for them.” (IDI Koinadugu 1, Health Worker, male)

¹ Type of bleach available locally

4.1.2. Health workers

Inadequate number of health workers

The respondents reported that there were too few health care providers working in the government health sector. This was particularly challenging in the peripheral health units: only one or two staff work in these units and they are mostly MCH aides, with limited skills and knowledge to deal with health care problems, including Ebola. Some geographical areas are particularly difficult to staff as people perceive a posting to these places as a punishment.

"...most of these health workers that are in the health centres within the district are just MCH aides; [...] and I am sure you know the equivalent of MCH aide? I am not crying them down but that is the reality, others even struggle to write their name - [...] let alone to ensure you treat a condition that professionals handle. So it's really a challenge but we want to say we are coping." (KII Koinadugu 3, Male)

"In Bonthe the staff was a problem. There are some PHUs we only have one staff in the whole centre. Imagine that staff is sick or is out for another duty, who will be there to serve the people. The staffing situation was poor because this is a district sometimes when they post people they will not come. They [...] have a preconceived idea that when you come here you on punishment, so they post people and they will not come, they say they send people, you go the next day see them working in some other areas." (KII Bonthe 3, Male)

A few key informants also reported that there was, and still is, a lack of "middle level" doctors. They suggested that overwork, poor salary, options to earn more money in the private sector, less stress in other areas such as public health may draw doctors (and perhaps other staff) away from clinical practice in government settings.

"There's a big gap....in their thirties and early forties they don't exist so you go to super doctor consultant like who are the experts the super senior doctors and then you go to the 25 years old child. Like there's no good salaries to retain at least to make people be focused on this and they go to the private sector because they need money." (KII Western Area 4, Female)

One health worker reported that there were very few laboratory technicians to carry out testing, and this resulted in overload of work.

"It was only the 2 of us, except for the (name) staff that came in to help in some areas like the sample storage and separation in you know the cold chain, sometimes or maybe they do the extractions... so we are doing everything...sometimes you go up to 60 (samples) ...yes and we run everything, we do PCR and ELISA (tests), the antigen testing together so that we have confirmatory result to give out at the end of the day." (IDI Kenema 3, Health Worker, Female)

Delay in receiving allowances

Many health workers reported that they had not received the remote area allowance, performance based financing payments or accommodation allowances for a long time before the Ebola outbreak.

"I was not receiving remote allowance I think for the past two years. No, I think I only received once for the past two years before the advent of Ebola once." (IDI Koinadugu 6, Health Worker, Female)

“The working conditions has not been changed it’s just the same, same supplies are not within time, er people are not that motivated in terms of payment promptly. Risk allowances are not paid, accommodation allowances are not there.” (KII Bonthe 3, Male)

Limited in service training

Several key informants reported that health workers have not received regular in-service training. One key informant reported his frustration in wanting to budget for provision of training in the district but the budget was cut. He explained that politicians are more interested in developing infrastructure rather than people.

“You know when I go back to 2012 when we were doing this initial erm budget for the district the various district, we actually pushed for trainings to be done you know internally. But you know these, when these politicians go, they look at infrastructure, they look at what we have left, the legacy we have left. But honestly, before even having the infrastructure it’s better for you to have the human resource.... So we advocated for our staff to be capacitated so that they can handle, you know, complications. They said no, we can’t emphasise on training, training, training and training. So they sized down the budget of training to 15% of the general project, so it’s a big huge challenge honestly.” (KII Koinadugu 2, Male)

4.1.3. Lack of readiness to respond to the Ebola Outbreak

There are several issues that relate specifically to managing the Ebola outbreak, which include limited knowledge of Ebola, infection prevention and control practices, using personal protective equipment, and no in country epidemiology expertise.

Limited knowledge about Ebola

Many respondents reported that very few health workers knew anything about Ebola. It was a new disease, although some had experience of managing Lassa fever. There were misconceptions about the disease – some health workers believing that it was a myth made up by politicians, and others believing it to be witchcraft.

“We are not prepared and most of the health workers well let me say about 90% never knew about Ebola.” (IDI Bonthe 1, Health Worker, Male)

“What we know today about Ebola is 10 times better off than what we knew by 29th last year; we were not prepared for Ebola, I believe now we are better prepared. So we had to work with patient who were not diagnosed, the screening process was not very effective.” (IDI Kenema 7, Health Worker, Male)

“Initially people had different ideas about Ebola ... even the health workers. Some of them are saying ‘oh no this is politics’, some said ‘oh this is witchcraft’ especially in those remote areas.” (KII Bonthe 4, Female)

There was also little understanding of how it was spread and therefore how health workers could protect themselves from infection. There were mixed messages about Ebola. This led to a lot of fear amongst health workers.

“First, it was fear, fear of everything, not knowing much about this type of disease that have broken out in the country. I started by reading about viruses, this one was a strange one

because I've seen viral infections, this was one was a difficult one. Lack of knowledge was what was prompting the fear and that one continued because this and also all sorts of messages. Everybody was coming with their own, it was not curable, this is what will happen, you should not do it that way. Everything they mixed and everything caused all that fear in us and as for me it continued but when we started learning about the Ebola it became a little better, but it was difficult.” (IDI Western Area 1, Health Worker, Female)

All respondents reported that they felt ill prepared to manage Ebola patients – they lacked confidence in caring for them and protecting themselves from infection. There was an overwhelming fear of the disease.

“I was really afraid because I was seeing people dying by then so I was really afraid.” (IDI Kenema 2, Health Worker, Female)

Limited knowledge of and skills in infection prevention and control

Health workers and managers reported that they had little knowledge of infection prevention and control (IPC) practices. At the start of the Ebola outbreak there was poor practice in terms of infection prevention and control. Even basic practices such as handwashing and wearing gloves were not followed, because of non-reinforcement of these practices in pre-service and in-service training and lack of supplies.

“Before Ebola, people ... were negligent towards the Infection Prevention and Control.” (KII, Koinadugu 5, male)

“The IPC standard was not good, the training was not that effective so we are not ready.” (KII Western Area 3, Male)

“People before, they didn’t have any idea about mainly basic things like IPC infection control, like washing hands or very, very basic things that you assume that everybody knows - but no, I saw nurses and still see them that are eating in the wards. And they are eating in the office, in the doctor office, in emergency with the same gloves that they are going to use to put a cannula. So it’s this kind of basic infection control things that are not there. We have to reinforce them more in nursing school and also medical school. We have to probably, we have to brainwash more while they are training - say like you know what, anything that you do doesn’t matter if you don’t wash your hands. Forget about the alcohol gel, forget about the chlorine, if you don’t wash your hands you are putting your life at risk.” (KII Western Areas 4, Female)

Using personal protective equipment (PPE)

Many were unaware of how to safely use and take off PPE. This resulted in health workers becoming infected. One doctor explained that he had to “google” how to put on PPE before assessing and providing treatment to a potential Ebola patient.

“I’ve never seen an Ebola patient before in my whole life and it happened last year, July. You know it was early July when we had the index case at the (name) hospital and then the patient come in, patient was admitted, I was the first doctor to see that patient. I was on call that day, I had to wear PPE after Googling it for 30 minutes rather erm read how to put it on and how to remove it.” (IDI Western Area 5, Health Worker, Male)

“Nobody was trained about IPC....When the introduction of PPEs actually started in the facilities nobody thought that when you get into the treatment centre and treat infected

Ebola, for every step we have to re chlorinate it everywhere before you take off the PPEs. That was not explained. So when our guys enter to that facility, they actually came back nobody was sprayed so by the time you start to remove - you know when somebody spend 2 hours or 1 hour you lose a lot of water because the PPE is very hot. So by the time taking off the PPEs there most of them get infected. But it came a time when we had international clinicians, when they entered they actually sprayed and when they are out they have to be sprayed because that is removed. Then we raise alarm, our own locals raised alarm, why you guys never taught us that after the treatment centre we have to be sprayed all over and taking precaution of removing these things in order not to infect us.” (KII Kenema 1, Male)

No in-country epidemiology expertise

One key informant explained that there were no epidemiologists in Sierra Leone, and there was only basic knowledge of how to manage disease outbreaks.

“Even with the local nationals there were no epidemiologists, you know some of us we are just trained in basic outbreak response from the CDC (Centre for Disease Control) three years ago you know. This country had nothing in place for the control of a deadly disease like that.” (KII Kenema 2, Male)

4.2. Response to Ebola

4.2.1. Health workers involved in the response

There were three main groups of health workers involved in the response. They included: health workers already working in the government health system and the military health system; local volunteers who were a mix of qualified health workers and non-qualified staff; and international volunteers.

4.2.2. Reasons for participating in the Ebola response

Health workers working in the health sector

Many of the frontline EVD health workers were already working in the health facilities. These health workers recognised that it was their duty as health workers to care for patients with Ebola and try to curb the epidemic. They wanted to alleviate suffering, serve their community and country. Key informants explained that health workers should take on this role, and in particular health workers who had experience of dealing with Lassa² fever.

“As health worker we are the frontline soldiers in self-defence because this is health matter, whatever happens we are the frontline soldiers. So we can be called to attack health or defence issues, promote health issues in the country. So primarily because I am a health worker of the Government of Sierra Leone.” (KII and health worker Bonthe 1, Male)

Other health workers reported volunteering to work in the frontline of the response when they were asked to by the MoHS. This was in reference to the early stages of the outbreak, when training of health workers to work in the frontline was limited as was the provision of the necessary personal protective equipment (PPE). Others explained that they took on the role whilst the doctor was away.

² **Lassa fever** is an acute viral haemorrhagic illness caused by the **Lassa** virus with similar symptoms to Ebola. It is transmitted to humans from contacts with food or household items contaminated with rodent excreta. The disease is endemic in the rodent population in parts of West Africa.

“Ah well during the outbreak erm we were sensitised, they talked to us, they asked us to go for training. We went for training and they asked people to volunteer to work so that we fight against Ebola and I volunteered to work.” (IDI Western Area 8, Health Worker, Female)

“I volunteered myself because we were having some cases where they need someone to see them while the doctor is not around so I stepped in the doctor’s shoes so that the patient would be ok.” (IDI Koinadugu 1, Health Worker, Male)

A few respondents reported that there was a mandate from the MoHS that all health workers in charge of a health facility should be part of the response.

“It’s clear that all those of higher cadre will serve as participants in the holding centre. I am the head of that holding centre.” (KII Bonthe 1, Male)

“It is a mandate given by the Ministry of Health. Automatically if I am the medical officer in charge, acting in the capacity as medical superintendent and then I should be head of case management in the district.” (KII Koinadugu 1, Male)

In the military hospitals, health workers were appointed by their commanders to work as frontline health workers. They were asked if they wanted to be part of the Ebola response team in their hospitals.

“Our Commander was kind enough to ask our consent if we wanted to be part and parcel of the team to help set up the A&E, set up screening protocols and help see the patients who turn out to be Ebola patients and I was more than willing to contribute. Because there was no way I was going home with my conscious not flagging me if had turned down or if I’d said no to my Commander, because [...] I did my medical school in this country and the entire time I was on the Government of Sierra Leone Scholarship. Which means it was tax payers money that was funding my medical schooling and now that the country needed clinicians to come to the front to tackle the outbreak my conscience would not allow me go and say ‘no I am not going to work with Ebola patients’; because that’s why I went to medical school in the first place.” (IDI Western Area 7, Health Worker, Male)

Local volunteers

Some health care workers who were not on the payroll volunteered to work in the Ebola response. There were several reasons for volunteering. Firstly, some were asked by senior health workers to assist at the facilities. Secondly, they volunteered in the hope that they would be absorbed into the health workforce, and be on the payroll. Thirdly, they wanted to serve their communities.

Some of these local volunteers were newly qualified health care professionals who had not been put on the payroll. Others were non-professionals who volunteered to do tasks such as cleaning and were willing to do this without payment.

“We were not forced, they asked us to volunteer, work for the nation to assist in deceiving Ebola. ... We took training two days then we started working in the unit. So we are there for some time working with my colleagues, although by then the Government Hospital was a ghost area; only the treatment centre was functioning by then. But really my colleagues we are afraid because our colleagues were dying by then so some say ‘oh we are not fit to work there’, but I was there talking to them that please let’s work, this is medical war we just need to fight this war. So with time we lost our Dr (name) and another hero in charge by then (name), we lost her and some important staff who were working at the Lassa unit. 8 of the

Lassa nurses are dead. So I was still there, the Deputy Matron was with us by then, she was really hardworking, she was motivating us to work. She just asked me to be in charge, just because of the hard work and the motivation I was giving to my colleagues, she said please work with me, lets fight this fight. So that is the way I get in charge.” (IDI Kenema 1, Health Worker, Male)

“Well when that happened, when the Ebola came into this country we are in the ward, so when this disease came into this country we really - deputy matron she was begging us to come and work here so that at the end of the day they will give us a pin code (so that they can be included on the payroll) out of the fight of Ebola.” (IDI Kenema 2, Health Worker, Female)

“Some nurses who just passed their nursing school exams and who have not been incorporated into public service and these were people who came forward to sacrifice their lives to help the situation.” (KII Bonthe 1, Male)

“It’s like have amazing - boys like in their early twenties, working as cleaners and these people didn’t have any chance of growing and improving, there was no future for them more than working as cleaning volunteers in the hospital, sometimes they get some tips, and suddenly they are trained, they are skilled. They are experts, and they are awesome they are incredible and they are respected and that kind of dignity and pride and knowledge and I think it’s one of the things that has sustained many of them.” (KII Western Area 4, Female)

4.2.3. Training

Training received: frequency, length and timing

All health workers reported that they had received training about Ebola. The length of training varied from one day to 2 weeks, with the majority lasting around 2 - 3 days. Some health workers reported that they received more than one session of training.

For health workers who worked in the Ebola treatment centres, they all received training, with the majority reporting only one session of training.

Training was conducted in April 2014, August 2014, December 2014, and January / February 2015.

Facilitation of training

Health workers reported a range of organizations that facilitated training on Ebola. These included international organizations such as Department for International Development, Médecins Sans Frontières, WHO, International Rescue Committee, GOAL, Tulane University, Voluntary Services Overseas, CDC China, International Organisation of Migration and King’s Sierra Leone Partnership.

Some health workers reported that they received training from the MoHS and DHMT. A few health workers reported that the health facility manager went for training, who then trained the staff in the facility.

One international health worker working in an Ebola treatment centre explained that she received training from the Australian Red Cross in Geneva before arriving in Sierra Leone.

A national health worker working in an Ebola treatment centre reported that they requested an experienced doctor to provide training at the centre.

“Well the very first training we had was a day’s training and it was organised by our public health training unit at the (name) Hospital and we invited a Ugandan Doctor Dr (name) who was then working at the Emergency Surgical Centre in (name) to come over and help us know more about the disease condition and how to tackle it. So it took us a whole day to go through the training and then we decided on setting up. But for most part of the outbreak we have learning on the job.” (IDI Western Area 7, Health Worker, Male)

Content of training

The majority of the health workers reported that the training had included signs and symptoms of Ebola and how it is transmitted, and infection prevention and control measures such as hand washing, how to effectively use chlorine solution, and how to safely use personal protective equipment. Some health workers explained that the training included establishing a triage system for identifying and managing potential patients with Ebola, how to set up infection control zones within health facilities, and how to set up an Ebola holding centre.

One midwife reported that the training included specific safety precautions to be taken in the maternity unit. One nurse working in a health facility reported that the training first focused on how to protect themselves and prevent spread of infection. Later, the training also included how to care for people with Ebola. One laboratory technician explained that the training focused on the safe collection, management and transport of specimens.

“Almost everybody within the hospital who was working for the Ministry - porters, cleaners, security personnel, medical nursing staff - have gone through that process of 3 days, you know, putting on and taking off the PPEs, everybody has undergone that training and that involves a lot. Personal hygiene, the way you scrub, washing your hands, how you put on the PPE and you get them off safely, things of that nature and then what is Ebola per se, the means of transmission and so on and so forth.” (IDI Kenema 7, Health Worker, Male)

“Infection prevention and control, er how to put on PPEs, hand washing, erm chlorine mixing and also some safe precautions in the maternity unit because my office is located in the maternity unit and I'm also supervising the maternity nurses.” (IDI Koinadugu 6, Health Worker, Female)

“Suspected, probable and confirmed cases, how we will even class them and we were given training on that. And how we treat them in the treatment centre itself. How you approach these patients, how you deal with them in the treatment centre, how you move in the one-way direction so that you do not infection from place to the other. But later on policymakers sat down and started looking at it 'cause we needed more, because the patients were the ones that we are going to the treatment centre for - if we could not touch the patient we cannot care for them, it would not be good. So those aspects were now added. How we now touch the patients, how we would treat them even though they are Ebola positive. How we carry on so that we ourselves are protected, and even the patients that are there, that will not get infected - those that who just came as suspected cases.” (IDI Western Area 1, Health Worker, Female).

Perceptions of training

Most health workers reported that the training had helped them to work in the health facilities and Ebola treatment centres. They explained that they felt less frightened of contracting the disease and therefore more confident to provide care. One midwife explained that she had been taught extra

precautions for conducting deliveries, including wearing the personal protective equipment, and felt more confident in providing these services. A laboratory technician explained that he had learned new techniques.

“The training we had they helped us greatly because you know a lot of health workers were not careful, were careless I will say careless, negligent in patient health worker care, you know, but due to the numerous training we received it helped us a lot in how to actually you know get in contact with patient.” (IDI Bonthe 1, Health Worker, Male)

“Yes it (the training) means a lot because there were some techniques which I didn’t do before but I was trained to do like during the testing in the lab. You know my boss [name] always go in and tell me what to do from one step to another so I was really you know learning more new techniques every day.” (IDI Kenema 3, Health Worker, Female)

“Well formerly, I was not really happy because we did not have the knowhow and we are not really prepared. But when we are trained by our partners and Ministry of Health, I think I had the confidence to work in the isolation unit but before that I was a bit scared, even the nurses they are a bit scared, because they did not have the knowhow and they were not trained properly.” (IDI Koinadugu 6, Health Worker, Female)

Some key informants reported that the training was useful and that health workers were more confident in providing care for all patients who came to the facilities, including patients with Ebola. However, some thought that more training was needed so that health workers remained vigilant and careful.

“Before the outbreak really they were not trained but during the outbreak after some training, some interventions from different organisations. They have confidence now because they are handling now the patients care and they are also protecting themselves and they have protective gear and that’s helped to protect themselves.” (KII Koinadugu 4, Female)

One key informant explained that more health workers needed to be trained as some were still reluctant to attend to patients.

“The only thing we need to do I think we need to further get more health workers on board. You know, to train more health workers to contain the situation ...they need to be trained further because as far as I’m concerned up to the moment I’m talking to you there are still hesitations. Some of the health workers are still hesitating to deal with Ebola issues up to this point I’m talking to you.” (KII Western area 1, Male)

One key informant explained that at the start of the Ebola outbreak, the training was vague and not based on evidence.

“There were no experts at that time, the training was something really vague and really not very based on much evidence 'cause we hadn’t seen an outbreak like this.” (KII Western Area 4, Female)

4.2.4. District level leadership and management during the Ebola outbreak

This section describes how the Ebola outbreak was managed at the district level. It draws largely upon the interviews with key informants, but also includes data from the interviews with the health workers. Firstly, we describe the key players at the district level who were involved in managing the response. We then go on to describe the challenges faced in managing, organising and coordinating

the response at the district level. Finally, we describe respondents' views on positive ways that the response was managed.

Key players in the Ebola response

The health workers and key informants reported several key players involved in managing the Ebola response at the district level. These are described in Table 3, together with how they contributed to the response to the outbreak.

Table 3: Key players involved in managing the Ebola outbreak at district level

Key player	Contribution to Ebola response
District Ebola Response Centres	Tasked with coordinating response efforts at district level
DHMT	Responsible for health services in district; poorly resourced; felt side-lined by District Ebola Response Centre (DERC)
Health facility managers	Organising health care activities; supporting their health workers; poorly resourced
Local and International NGOs	Some districts such as Western area and Kenema had a lot of support e.g. training, equipment, staff, transport. Bonthe receive little support as less affected by Ebola
Local council	Health committee of the council; not included in DERC in some districts e.g. Bonthe
Local business owners	Some provided fuel to DHMT; some organised fund raising activities in the community to support the response and recovery of EVD survivors

Key challenges identified in managing the response

- **Late response to Ebola outbreak at the central and district levels**

The 2014 EVD outbreak was a new phenomenon for most people in Sierra Leone and no one at national or district levels really knew how to manage or handle the epidemic. Many of the key informants reported that Ebola was only taken seriously once it had reached Freetown, by which time it had reached epidemic proportions and had caused many deaths within the districts and Freetown. There was a lack of preparedness to manage the epidemic such as having enough equipment and supplies, skilled and motivated workforce, and adequate isolation and treatment beds. Preparation was slow and measures were only put in place during the response.

“The leadership thought the Ebola is just for the eastern region it will not spread out, go to Freetown or to the extreme other districts. So they didn’t take prompt action. It was only when they thought oh this is going out of hand that they started they say ohh lets take something or let’s do something towards this.” (KII Bonthe 4, Female)

“The health system was taken aback, the response at the time initially wasn’t good, because nobody knew what was happening. It was like were in limbo, not knowing where to go so the response was not really adequate, neither good.” (KII Bonthe 3, Male)

Key informants reported that the country relied heavily on international aid. However, this international aid was also delayed, as WHO was slow in declaring the Ebola epidemic as a global emergency. Key informants explained that the international community was not familiar with the Sierra Leone context and received little guidance from national leadership structures as they had little understanding of the outbreak.

“So we didn’t know and also with the magnitude that it got here. To have leadership you need someone who knows something about this, and there was no one who really knew. Also the people who probably knew a little bit didn’t know really well the context, and the background here and the people who know the context and the background here didn’t have the knowledge about Ebola.” (KII Western Area 4, Female)

- District Ebola Response Centre (DERC) taking priority

Many key informants reported that the DERC took the lead in managing the response at district level. However, they reported several challenges with this. First, key informants described the DERC as being “full of politicians” and not having the necessary knowledge for their positions and for making decisions. This was further described as “political interference” as the politicians were taking the roles of the health workers and “claiming for supremacy”. This caused friction with one health worker reporting that this resulted in some health workers boycotting the DERC meetings. However, health workers realised that by boycotting these meetings, poor decisions would be made, so they returned to the meetings.

“The district taskforce was full of politicians and because of that, they started side lining the Ministry of Health people. They will come saying I will head this pillar, I will head this pillar, I will head this pillar and I quite remember in one of our meetings, [...]so I said well you are saying you are head of erm you are head of social mobilisation. What do you know about social mobilisation in the Ministry of Health (pause) and that created a lot of confusion that day.” (KII Koinadugu 2, Male)

“What we see happening in most countries that have you know special regard for health situation is that health professionals sit and brainstorm, get a document together and dictate what happens on health. It is the reverse that is happening in this country. It is those who have little or no knowledge about it, dictating what happens on health. For example, the Ebola situation, you see there is this Ebola response team.” (IDI Bonthe 1, Male)

Second, some key informants reported that power struggles interfered with the response.

“But that was a big challenge for us, the politician interfering too much on the work of the health staffs and there was this you know this erm you know everybody claiming for supremacy...but I think as time goes we actually understand that if we relinquish all these position or these part to them they will see we are not effective so we started you know taking leadership of most of these things.” (KII Koinadugu 2, Male)

Third, resources were diverted to the DERC. For example, the DERC had several vehicles, whereas the DHMT struggled to manage the health services in their district with one vehicle.

Fourth, existing decision making bodies at the district level were not involved in the DERC. In some districts, the local council was not included in the DERC. This was reported as being very demotivating as the Local Council lead a team comprising of members of the DHMT and chiefdom heads in the district EVD response before DERC was setup. However, when the DERC was established, the local council was not part of the team.

“Just after the outbreak of the Ebola, Council take a lead by making team with the DHM Team, make tour within the Chiefdom in the districts but on the arrival of the DERC, the DERC couldn’t involve the Council up to this moment [...], I made a cordial communication with the coordinator (of DERC) after a few months [...] saying that the inclusion of the Council is very necessary [...] they have a very key role to play in whatever, especially when there is an

outbreak and there is fear in the people [...] people trust them and have confidence in them but up to this time we are not included in the DERC activity.” (KII Bonthe 5, Male)

- Challenges faced by the DHMT and facility managers

Key informants reported that the DERC had overall responsibility for managing the Ebola in the district as described above. Members of the DHMT and managers of the health care facilities felt they were side lined. They had more knowledge about Ebola, were more knowledgeable about providing care to patients and families, and understood their communities better.

“The response was not adequate because if I am a professional and you are just a politician, then you want to do what is wrong and I know it is wrong and, I'm demotivated, I will just sit back and watch. I will not tell you because if I tell you, the politician and the professional has two different issues. So putting those who are on the same frontline as coordinators was a big mistake, because they have different views, they have different focus. So in the terms of an epidemic I think the health sector health leaders should be leading people, others should be followers.” (KII Bonthe 3, Male)

“... they've actually marginalised the head of the case management in the district, they've actually marginalised me as head of case management. But I'm still doing my work. I'm seeing patient whether a suspect or the confirmed case I'm still seeing them. Because of one or two reason for peace to reign, I decided to just concentrate on patients coming to the hospital rather than being with the community people that are involved in the Ebola activities.” (KII Koinadugu 1, Male)

Health facility managers and DHMT members reported many problems with procurement of essential supplies and drugs for the facilities. They thought that if procurement systems were more efficient and quicker, or that they had been given the funds to buy their own equipment, they would have better managed the outbreak. This was a problem in Freetown, but was even worse in the districts.

“The response rate should have been faster because when we had that first outbreak, I think if the funds were available directly to us we could have got the chance to buy some this face masks yes this equipment gears protective gears. But because of the long procedure the protocols we have to write, they have to come and verify, they have to do this, during this crisis we have been told by the President to minimise the protocol, to minimise even the procurement procedures.” (KII Western Area 3, Male)

“There were no fuel given to hospitals to run their generators if there is a generator in fact if there's one. (KII Bonthe 3, Male)

DHMT members had difficulties with providing supervision to the facilities as they often only one vehicle (in contrast to the numerous vehicles used by the DERC), and had little fuel.

“Yes, if they are giving support to the ministry as they are giving to DERC and other agencies, it would not have gone this way. So that was the bad leadership about it.” (KII Bonthe 3, Male)

Key informants reported that staff in peripheral health units and secondary hospitals felt isolated. They had fewer opportunities for training and professional development pre and during the Ebola outbreak.

“So we work at a mix of peripheral health units and small community or district hospitals and I think the main problem is organisational and leadership within these units. Erm that a lot of the staff there feel slightly cut off and feel like they miss out on opportunities of training and professional development.” (IDI Western Area 9, Health Worker, Male)

Managers had to deal with the challenges in the payment of the risk allowance including: not being given to staff who were working with Ebola patients; delays in receiving the allowance; and senior managers or clinicians receiving the same amount as more junior or non-qualified staff. Some managers spoke of going to Freetown to sort out the non-payment and delays of the allowance; others reported trying to generate money or provide money out of their own pocket to give to volunteers who were not receiving salary or the allowance.

“We are having so many problems, one the allowance didn’t come in time. When it came some workers they didn’t have. I spent some sleepless nights making connection to the centre here. Yes, so I spent so much money in connecting people to the office outside the Ebola Response Centre here. You have children in the house, you give some food, you don’t give the others food so it is a burden on you. I had to do everything I could to make sure that these remaining workers that did not get allowances, get them. So that was like the problem to reach a point where we have to like come to Freetown, pay from our pocket, come and discuss with those who matter in terms of remuneration of health risk this Ebola risk allowances.” (KII Bonthe 1, Male)

“Most of these workers are or 50% of them are volunteer workers. So we want to keep them in the small money that we have, we generate some money and we just like give them to motivate them to continue work.” (KII Bonthe 1, Male)

Positive ways of managing the Ebola outbreak

There were some examples of positive ways of managing the Ebola response at the district level.

- **Coordinated roles and responsibilities**

Key informants reported that coordination of roles, responsibilities and activities as well as team work were critical in managing Ebola. Some reported that the Government of Sierra Leone should have asked earlier for help in coordinating the response. In Koinadugu district, key informants reported that regular meetings with key stakeholders involved in the response were held. In addition, an organogram with clearly defined roles and responsibilities was developed to support coordination between the key players and stakeholders.

In Kenema, the key informants reported that there were regular meetings with staff working in the treatment units.

“You need to work as a team, let nobody says I know better or I can do this better. We all need to work as a team - the NGO, the local partners, the DHMT we are all working together. We have a floor on where we meet, we have our pillars, different pillars. We have a meeting everyday, discuss things. So that shows that we need to work as a team.” (KII Koinadugu 4, Female)

“We have erm you know the organogram is there. We have the DMO in charge of the district and he’s the lead person for the primary healthcare, and we have the secondary healthcare which is headed by the Medical Superintendent.” (KII Koinadugu 2, Male)

“All of us were coming together, we had a series of meetings almost every other hour we were in the meeting people started becoming positive because we were having meetings with people who were in the treatment unit, and in that you know coordination, there is contact so people starting becoming positive.” (KII Kenema 2, Male)

- **Involvement of the community in activities**

Koinadugu was the last district to be affected by the outbreak. Key informants reported that this was due to a community taskforce being set up before the outbreak reached the district. Initially, the community task force was made up of the paramount chiefs, section chiefs, town chiefs, mammy queens and youth leaders, who met on a weekly basis to discuss the EVD outbreak. Their role was to promote health messages.

“Well the community people, their role, we formed this community task force for Ebola and we do meet on a weekly basis every Saturday. The Paramount Health Chief, all the sectional chiefs, the town chiefs, the mammy queens and the youth leaders we do meet on a weekly basis to discuss the issues of Ebola in the Chiefdom and also strengthen the bylaws.” (KII Koinadugu 5, Male)

Health professionals were not included in the taskforce initially and this created some problems. One key informant explained that health workers felt the roles of the community and the health professionals were not clearly defined and felt marginalised by the community activities. Health professionals reported that they should be the reference point for the community.

“I think it should be the community who should seek advice from the professionals and not the professionals going to meet the community people to seek advice from them, or let me say to guide them how to work because to be frank, I'm a medical doctor but there is no way I can go and meet an accountant or a lawyer and then dictate to the lawyer what and what to do. I think it's only in the health sector that this is happening, so that's a big problem and it will never be, there will never be a proper coordination if things continue to go on like this.” (KII Koinadugu 1, Male)

4.3. Impact of Ebola

4.3.1. Impact of Ebola on communities

Communities' trust in health workers

Most health workers and key informants reported that there was a breakdown of trust between communities and health workers. They explained that many community members believed that Ebola was spread by health workers through contact, exchanging blood or injections, and were frightened of health workers dressed in the PPE. A few health workers reported that communities did not believe that Ebola was a real disease and this was something made up by the health workers or government.

One health worker in Kenema district explained that the landlord of her rented property wanted her to leave as he was frightened that she would bring Ebola into his house. The local deputy chief intervened and was able to persuade the landlord to allow the health worker to stay.

“In fact the house where I was staying people was afraid of me. In fact, my landlord gave me a paper [as in eviction order] for me to leave his house.” (IDI Kenema 1, Health Worker, Male)

Another health worker reflected on how she was well respected within the community prior to the Ebola outbreak and how this had changed dramatically:

“My community, I used to be friends with a lot of them they used to look at me with a lot of respect because of what I was doing for them in the community. They will have their problems they will come to consult especially on health issues. Some I will refer to the hospital, if I have to go with you, I will go with you. So they respected me a lot. They will greet me as I am coming by, some of them will send their children to carry my bags when I'm from town. But when Ebola broke out. The first thing was, I said to myself I will go and talk to my neighbours so that they will know the little that I know. As I'm talking to them some of them will go to the corners, they will be laughing as if they don't believe anything that I'm saying but I just kept on because I thought I should say something and as time progressed when I greet them some of them will just turn their backs away or their eyes so that they will not even answer me, so I will not pass through their company. So I had to normally go through the long way, I don't go into their compound there was so much animosity, and even there is no friendship, the community people no one to tell me their business because they say I will go and call all the Ebola people, that I will call 117 (as in the Ebola hotline) so they don't tell me their business. The community, everybody's just to themselves there's no enjoyment there's no er er when somebody comes to visit in your community they will start to report that there's somebody around... there was no friendship people don't want to know about the others [...] even children they don't play together and where we used to fetch water together that one all broke down because nobody should be together with the other because of the Ebola. And let me tell you, even when I go around now to tell them people will say what have you done with Ebola? As if they still believe that some of us had something to do with the Ebola.” (IDI Western Area1, Health Worker, Female)

However, a few health workers in the Western Area reported that there was trust and respect between communities and health workers. They explained that community members did listen to their advice about how to prevent Ebola spreading, including how to safely bury people who died from Ebola, and when to go to facilities for Ebola screening.

“When I go home, they would come to me, they would ask any new updates, any new method, any drug. They would ask so many questions and every one of them in fact they were the ones who erm bought Veronica³ buckets on their own.” (IDI Western Area 10, Health Worker, Female)

Communities' use of health services

Many health workers and key informants reported that community members were reluctant to visit health care facilities for screening of Ebola, as they were frightened that they would contract Ebola from the health workers or other patients.

They also reported that community members were reluctant to visit facilities when they are ill or for other services such as antenatal care and immunisations. They explained that community members relied on relatives to care for them, and this had resulted in many deaths amongst adults and children. One health worker in (name of place) reported that health workers visited communities to provide services but people stayed inside their homes and refused to participate.

³ Buckets with a tap attached, using during the EVD outbreak to practice IPC nationwide

“Even the patients that were coming, most of them were afraid that when they come to the hospital they will say they have Ebola, so they don’t come to the hospital for treatment. Some of them die because of some funny disease condition that will be cured; they don’t come to the hospital. This affect our people greatly” (IDI Koinadugu 2, Health Worker, Female).

“They (health workers) can sit for the whole day maybe only one patient. So people were not coming so it a negative effect on them, [...] People were not coming when they go out for outreaches [...], scared they go into their houses. So they were traumatised it had negative effects on them.”(KII Bonthe 4, Female)

“She had a problem at home she was bleeding from vagina, I cannot forget this case. She has just got married, she was about 24 years. The husband brought her in very late [...]it was ectopic pregnancy but she died on the table. We asked the husband, he say ‘I did not want to bring my wife because people come and tell me it is Ebola’. A simple case that should have been handled by the doctors in a quiet moment very quickly, patients have been surviving from this ectopic. For this young woman who has just got married, to die, was a difficult position for me... Where we have the free healthcare for women ... they will not come, they will have their problems and stay away. Some who ventured to come were brought in very late, it is only now that we are trying to talk to them again so that they can come for the family planning services, their postnatal visits, their antenatal clinics and on and on but the patients they really suffered. They do not trust us and when they come we too we are afraid of them because then PPEs were not available although when they were available they were in very short supply.” (IDI Western Area 1, Health Worker, Female).

One key informant, a member of the DHMT, reported that they had to stop a community based survey on HIV because people were frightened about the contact with the health workers and the blood tests.

“For PMCT (Prevention of Mother to Child Transmission) everything stopped because the pregnant women they are afraid to come to us for this survey and they went to the authority, they told them that we are taking blood from people. So we decided to stop that activity and we called the DHMT and we informed them that we are going to stop the HIV survey because people had started raising concerns and they are giving us problems so we stopped.” (KII Kenema 4, Female)

Another unintended effect of the outbreak was the perceived rise in teenage pregnancy as girls stayed at home for a long period of time because of the state of emergency. One key informant gave a strong case for educating the girl child and how this can translate into social protection.

“...you know a lot of our school going children the girl child, pregnant as a result of now having to stay at home for prolonged periods without doing anything. So we need to have programmes, in order to continue to come and reassure these people that are involved you know so that er there can be better hope for the future.” (KII Western Area 1, Male)

“When you educate a girl child that family have so many educated people. When you educate a girl child and that girl child becomes a professional and she is highly placed, so many people they become educated and in this disease that we are just we are battling with, has some er social class something with it.” (KII Western Area 2, Female).

Restricted movements within communities and effects on their lives

Some health workers reported how the restricted movement employed as a way of controlling the spread of Ebola had affected people's lives. Community members found it difficult to continue their income generating business and harvest and sell their crops. This resulted in a shortage of food for families. Children were unable to go to school, or play together in their villages.

"Actually it's affected at the current time they were not allowed to move to other villages, [...] we just stayed indoors and those are the times of harvesting. Most crops were destroyed because people were not allowed to move, movement was restricted and contact were restricted you see." (IDI Koinadugu 5, Health Worker, Male)

"Well most of the neighbours, at first you know when you have a neighbour, the children they used to come to our house, some of them to play with our own kids. But Ebola brought distance. Now everybody stays at home, nobody goes to anybody, everybody keeps to themselves, everybody's indoors" (IDI, Western Area 4, Health Worker, Female).

4.3.2. Impact of Ebola on health workers

Health workers' fear of patients

There was a breakdown of trust between the health workers and communities as described in section above.

In addition, many health workers reported that they were also afraid of patients. This was particularly the case at the start of the outbreak, when health workers were ill equipped in terms of knowledge and supplies to protect themselves from infection. A couple of health workers also reported that patients did not always answer truthfully about their symptoms during the triage assessment, and this exacerbated their lack of trust in the community.

"They started learning some of the questions that we will ask them at triage when they come so the patients were lying. There was not truthfulness that created fear. And also even amongst ourselves the animosity the disease was creating, everybody wanted to leave, some of us wanted to leave but you couldn't just leave your profession and go away." (IDI Western Area 1, Health Worker, Female).

A few health workers described how trust between the health workers and communities was rebuilt through going into communities and communicating about Ebola and how it can be treated, and encouraging communities to attend for treatment of other illnesses and maternal health care services.

"They were afraid not even to come in this place...yeah with time we went out and give health talks, we went in their places we have somebody that is there with megaphone. They went out and announced to them - don't be afraid of the hospital, the hospital as a whole is not a holding we have the place that we isolate suspect cases and we have another place for treatment and even for deliveries. So when the message was out they started coming again." (IDI Western Area 6, Health Worker, Female)

Personal life of health workers

The respondents reported several effects of the Ebola virus on the personal life of the health workers.

Firstly, families of health workers were very worried about their relatives going to work in the facilities, either Ebola treatment and holding centres or “normal” health facilities. They were worried that the health workers would contract Ebola and either die or transmit it to other relatives. In some instances, female health workers were prohibited from working by their male partners and relatives. Some health workers reported that they were pressurised by their family to discontinue working but they continued to do their job as they felt that it was their duty. Some respondents reported that other health workers did give up work and stayed at home.

“I had a few nurses who came and told me ‘my husband says I should not work if I work I will not go to that house again’.” (IDI Western Area 3, Health Worker, Female)

“Most of the nurses here they were stopped by their husbands not to work.” (IDI, Western Area 4, Health Worker, Female)

“Even the time I'm pregnant, my family my friends they told me that ... for now don't go to the centre stay, stay for now, wait a while. This is Ebola time and this Ebola is so serious. Most likely the place where you are going that xxxx place, they have suspected cases there and you are going at xxxxx don't go yet. Your life is more important and now you are pregnant too you are to risk all that. I said no I'm going.” (IDI Koinadugu 6, Health Worker, Female)

Secondly, most health workers reported that they were also very frightened of contracting Ebola, as they saw many health workers, relatives and community members die. One health worker spoke of caring for a colleague as she died and later realising that she died from Ebola. Another health worker described how he constantly looked for Ebola symptoms.

“October 16th or so we lost our colleague here and I was the person that stayed with that colleague for the rest of the day. When I went home they called me, they text me that she's gone, she's dead. After when she had died, I think three days or four days after, the result was out ...saying she was positive, Ebola positive. I started thinking about myself ... the time that I was taking care of Nurse xxx, did I dress properly, how did I dress. So I was confused, my mind was scattered, I began to think automatically. After 2 days I became sick, the mind was sick, everything about me was sick. I came here I told the in-charge ‘please let them collect my sample, I am sick’, she says ‘no you are ok, you are well’, I said ‘no my mind is sick, my body is sick, please help me’. She said that we don't have to take the sample for now til after 21 days, let us all observe ourselves. Hmm so after 21 days they collect my sample, negative.” (IDI Western Area 1, Health Worker, Female)

“So all the time, round the clock you have to be alert. The funny thing about anything is that knowing the signs and symptoms of Ebola, when you go home, dust during the day affected your eyes and you started blinking. You sit at home, maybe this is Ebola, you begin to count 21 days. The next thing your joints are aching, maybe you strained a muscle or tendon or ligament or whatever, maybe Ebola is starting new with my big toe. So round the clock people were mentally affected thinking everything is Ebola. You ate the wrong food and then stomach ache you think about Ebola, loose stools you talk about Ebola, Malaria came in and slight fever you think about Ebola. So round the clock you were all everything about your was Ebola. So these are the psychological things also.” (IDI Kenema 4, Health Worker, Male)

Thirdly, Ebola affected how health workers interacted with their families. Some health workers reported that they didn't get close to their families until they had changed their clothing and washed thoroughly. They were reluctant to have close contact and play with their children. One doctor

working in an Ebola treatment centre, spoke of not visiting his home for many months as he didn't want to put them at risk and make them have to stay in quarantine.

"Personally Ebola affected me and my family. Whenever I'm off duty when I get home I make sure I don't go close to my immediate family or the family until my wearing's are taken off. I spend some time alone, ask them to give me soap and water, take my bag then with that present wearing that I'm coming out of the hospital with, should be soaked in a soap and water before ever I get closer to them. When it started when we were wearing our uniforms from the house to the hospital it was a bit difficult but later after the training we were told when coming in on duty we have to wear another different wearing." (IDI Bonthe 3, Health Worker, Female)

"I left home on August 7th 2014 and since then I've not been back because I didn't want to work with patients and go home and if I should fall sick, if its Ebola then my family will have to be in quarantine for 21 days, which would mean my sisters would not go to work, my brothers would not go to work, my mother would not go to work. They will all be kept at home because of the national policy. I told them 'I am sorry I can't say no I will have to do this work but I will have to leave them'. So since then I, most of the time I go to the office to say 'hi' to them or call them on the phone. I have not been home, this is one sacrifice I have had to make to get separated from my family." (IDI Western Area 7, Health Worker, Male)

Fourthly, health workers were frequently ostracised by their communities. Examples included: not being allowed to use the village well for their water, being asked to leave their rented accommodation, and not being allowed to use taxis.

"(They were) saying your husband is working there please don't get from our well, don't come to our pump (as in water pump). So my wife is really stressed by them. I always told her 'please just be calm we know we are doing the right thing let us pray'." (IDI Kenema 1, Health Worker, Male)

Fifthly, some respondents reported economic hardship for health workers. Some health workers did not go to work and therefore did not receive financial incentives, and relatives did not go to work because of movement was restricted.

"Then economically you know Ebola has had some economic you know shortcomings. You know many health workers their basic earning power decreased as a result of Ebola. So it has this economic impact which has an attendant problem on the family livelihoods." (KII Western Area 1, Female)

Professional life of health workers

- **Increased stress and overloaded with work**

Health workers reported experiencing a lot more stress at the workplace since the outbreak of the Ebola virus. They reported that many health workers died from contracting Ebola from patients. Some respondents explained that as some nurses and doctors did not come to work, they had to do their work as well as their own, resulting in long working hours, being very busy and increased stress. They also reported that not knowing if someone was infected with Ebola, having to ask questions and not touch the patients was very difficult.

One health worker explained that working in the treatment centre was less stressful as she knew that the patients had Ebola and they had the protective equipment to prevent infection. Some health workers who worked in the delivery room, said that it was challenging to look after women

during labour as they were all suspected to be carrying Ebola, and they were often very tense and agitated. One key informant explained that at the start of the outbreak, many junior doctors went on strike as they felt unprotected and ill supported; they had seen a doctor contract Ebola from treating a patient without being properly protected.

“It really affected my profession ... it was becoming a problem I cannot wear my uniform to work. I cannot come and perform my own functions as normal because by then patients come, we treat them, but now everything was protocol. On paper you have to start asking some of these questions, have you been down with a fever, has somebody died close to you. Some people became very suspicious of us and so they did not want us. So that affected like me it affected me a lot. I love my patients to have confidence in me, that one was broken.” (IDI Western Area 3, Health Worker, Female)

“The main effect on Ebola on the health worker is let me say the stress and the over work of job”. (KII Western area 5, Female)

“When the first day that Dr xxx went inside for, to take a sample blood sample from one patient that was one of our first positives. He got stained with a lot of blood because it was a very complicated procedure and he ended up getting infected and he died one week later. So that’s when the junior doctors, the house officers er decided to strike like they were really scared. They didn’t feel that they were supported because nobody was supported, nobody knew what to do. So they felt that they were put in the first line of the Ebola response and they are just one or two years after medical school, so they just said like ‘no no no we, this is not our battle we are not going to be here, if our senior doctors are not going in the first line we should not be in the first line’. So we had a very interesting conversation and meeting with the ministry.” (KII Western Area 4, Female)

- **Improved skills and knowledge**

Many health workers and key informants reported that health workers had developed knowledge and skills in triage, management of Ebola, and infection prevention and control measures through the training workshops and clinical practice. Some felt that they would be better equipped to manage outbreaks in the future. One key informant explained that they hoped to continue the triage system after the Ebola outbreak has subsided. Another key informant reported that national staff had gained many organisational skills and confidence in managing the holding centres.

“You know the positive aspect is that I have gained a lot of confidence, experience, I have a vast experience you know and I know some day if there’s any outbreak like this I will be able to stand to save lives. I’m very, very well confidence in it.” (IDI Western Area 8, Health Worker, Female)

“I think there are some very positive experiences that have come out of it. Most of our sites are now run completely by ministry of health staff and that is mostly senior nurses, sometimes even hygienists, porters and cleaners, who have taken up the running and organisation of holding units and run them very well so I believe there is a lot organisational improvements that have happened” (IDI Western Area 9, Health Worker, Male)

“So the response has brought on-board that awareness. So most of our health facilities, most of our health workers which was never present, they’re now screening, they are now triaging. If I come and I am looking very sick they will pay more attention to me quick so that

I will leave and they have places to put me if I am a suspect. So screening, triaging and isolation.” (KII Western Area 2, Female)

- **Relationships with colleagues**

Many health workers reported that health workers appeared to be suspicious of each other. Health workers working in the holding and treatment centres explained that staff from the general wards avoided them and did not speak to them as they were frightened that they had Ebola and would transmit the virus to them. A matron explained that usually she held a meeting with the nursing staff every morning, but since the Ebola outbreak, staff were reluctant to attend the meetings.

“... colleagues in the general ward they were really intimidating us. If I walked through this corridor, they will just move and just give a space for me to pass. So really the intimidation was by my colleagues. I was talking to myself that this is Ebola so it is not their fault. It is because of the Ebola so they are all afraid. So but by then we are talking to them that we are not carrying the virus with us, they need to courage us, they need to talk to us we are fighting for them.” (IDI Kenema 1, Health Worker, Male)

“If I have a friend who left ages I don’t see for maybe say 3 /4 weeks and all of a sudden I meet him somewhere in the company of others I am very reluctant to shake his hands or her hands. Because I don’t know whether he or she was under quarantine and ran away from that quarantine, we became very suspicious of each other” (IDI Kenema 7, Health Worker, Male)

“My colleagues were not coming closer to me. I remember I got sick for like three or four days. They were saying oh I’ve catch Ebola. But I knew within myself I was confident that I have no Ebola because the people who trained me I really believe in their training.” (IDI Western Area 8, Health Worker, Female)

- **Relationships with managers**

Some health workers reported that relationships with their managers were good: the managers were supportive, talked to them regularly and encouraged them to keep working. However, other health workers were less positive. They explained that managers gave instructions, but rarely came to see them and give encouragement.

“My managers, really it was cordial because they are motivating me. They are really encouraging me like the matron, deputy matron, the DMO, the secretary, really the hospital staff are really motivating me, praying for me every day, so that even motivate me more. And with time, the President came, he was here and that was the first time to even come very close to the treatment centre. So he prays for us and talk to us. So I mean that makes me to be confident and do my work so I am glad and the blessing because the doctors motivate me.” (IDI Kenema 1, Health Worker, Male)

“Well err unfortunately I think because I am a nurse, it was as if Ebola is nurses’ business because the other managers they will dictate, they will err recommend...they will say oh yes this should be done, this should be done. But when it comes to matter of at least meeting with staff and others in that unit or even going to the outpatient like seeing patients or whatever they were withdrawn. And sometimes even the lower classes sometimes they would whisper, matron do you know that since this place was prepared such and such a person has never been here to even say hi to us or to even err congrat... to say thanks for the effort we are making.” (IDI Western Area 1, Health Worker, Female)

4.3.3. Issues with resources

Many health workers reported that there was a shortage of supplies such as gloves and personal protective equipment. This prevented health workers from providing any care as they did not want to put themselves at risk. This also stopped health workers giving the right treatment for example, they were unable to do a caesarean section because they did not have enough personal protective equipment sets for the doctor, assistant and nurse. Some health workers reported that they were unable to give adequate treatment such as enough intravenous fluids or drugs. Some health workers explained that they had many arguments with the storekeepers to try to persuade them to provide more supplies and drugs.

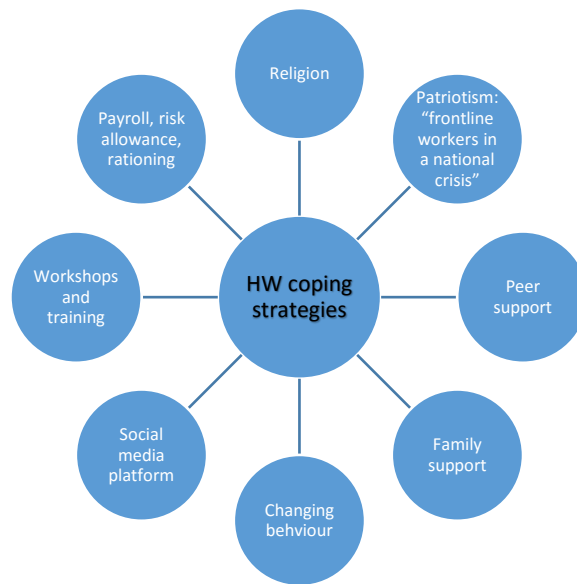
“I have some public health experience but my day to day work is clinical, it’s looking after individual patients yes. So it is difficult then to see among the 40/50/60 patients that you have, that with more resources we would be able to save more live. At that time in November we didn’t have the capacity to give so much IV as we wanted and some other treatments. So that was I think from a personal level the most difficult for me to cope with that I knew with more resources we could do more.” (IDI Kenema 4, Health Worker, Male)

“But when you normally go and make your request for the items, you need. Like for example you ask for the overall you want like 50 let us say 100 in your unit the ones that you need, they will give you like 30. It’s always in short supply so we keep arguing. Sometimes when they see your request, they say ‘oh this one she has a problem’ but it is not a matter of having a problem. You have people there that depend upon you because if you don’t request you are not supplied. I’m not there throughout the day because I need to go home at night, when these cases come, women come with difficult labour they need to be operated on. The doctor needs to be dressed, the assistant needs to be dressed and the nurses need to be dressed. When these are not available we tell the authorities in the morning - they are annoyed and think you just don’t want to take off your responsibility. That brought a lot of animosity amongst us with the administrators, even the storekeeper. It is only now that things are coming now because some of us venture to go where these things are kept and we tell them that we know you are supposed to supply us and if you don’t give us we are not going to work. As for me in my place when we don’t get these things I normally tell the nurses I say ‘please don’t risk your life because you will die. When you become infected, it’s 50/50 that you will live or you will die’.” (IDI Western Area 1, Health Worker, Female)

4.3.4. Coping strategies of health workers

Health workers and key informants reported several strategies adopted by health workers to cope with the effects of Ebola on their professional and personal life. These included: religion, sense of serving their country, peer support, family support, social media communication and support platform, financial strategies including risk allowance, workshops, training, and changing their behaviour (see figure 1).

Figure 1: Health worker coping strategies



Religion

Many health workers reported that their religious belief helped them cope with seeing patients and colleagues dying from Ebola. They prayed to God for being spared from Ebola.

“My confidence is with God by then, because really it is not easy. Colleagues are dying, other people are dying but I said now if I left who can save the lives. So I will just believe in God to do my job.” (IDI Kenema 1, Health Worker, Male)

“It was only by the will of God which make all of us here today. Really the thing it was tedious for us and we thank God we are here to do. Others have passed away, we are here today, so we pray to almighty and God for what he does for us.” (IDI Kenema 2, Health Worker, Female)

Serving their country

Many health workers reported being “frontline” health workers dealing with the outbreak. This was a national crisis, and they felt it was their duty to serve their country.

“We just feel that we are Sierra Leoneans and we should, if we do not go into and help our people who will do that.” (IDI Bonthe 1, Health Worker, Male)

Peer support

Health workers spoke of the support they received from their peers. Health workers encouraged one another. They prayed and fellowshiped together before starting work. They looked after each, watched how they were managing patients and reminded them about infection control.

“If I make a simple mistake, just a simple one, I will die. So what we have been doing is to constantly keep ourselves like we our colleagues we talk, we have some free line (as in telephone calls) during the night. If you keep awake at that time you will now tell your colleague please be careful, keep your children indoors, and what we should do. We will try to remind ourselves, we send text messages around, we wash our hands. Like in my unit now we will get there in the morning, take some chlorine that two or three people have come together to mix to make the mixture So all of us we soak some material in chlorine, so that

we will take it as a hanky, we will be using this as hand cleaner as we go around. Some, we will allocate somebody to wipe the door handles for us, because before that we did not mind some of these things. And we always remind ourselves if anybody is called for a patient, like an example you call your colleague to go and see a patient you quickly call the colleague, you say please don't forget, don't go touching. Don't go doing these things. Always remember that I should not touch with my hands, so we now use thermometer - they brought the ones that you cannot even touch the patient." (IDI Western Area 1, Health Worker, Female)

Other health workers reported that they received support from senior people and managers. Some health workers explained that they were hesitant in treating patients on their own but become more confident after these patients were seen by a more senior health worker e.g. a doctor.

"Like in my hospital I was really impressed with my doctor and my matron. They came in at the time we needed them most. Most of the times when these patients have come around, we feel frightened to go there but if they first get there we feel that we are safe. So we continue to work with them." (IDI Bonthe 3, Health Worker, Female)

Family support

Some health workers spoke of their family support, and how their words of encouragement helped them cope with their work including loss of colleagues.

"Yes our friends come, my family, my family called to support us to make sure we take care and then give us words of encouragement you know, whenever we lost our colleagues." (IDI Kenema 3, Health Worker, Female)

Changing their behaviour

Health workers reported having to change their habits during the outbreak. This included having to wear long sleeve clothing and keeping hands folded to minimise bodily contact, avoiding crowded places, avoiding family members after work and educating their households on infection prevention and control measures.

"I put on long sleeves. Even as I'm doing this interview I have on long sleeves. Even with the hot weather in our country, because we go into vehicles to move around, because body fluids we say carry the Ebola virus, we put on long sleeves. When you get home, you don't enter your home we stay outside, remove what you have been putting on, leave them outside and we advise our children or our people not to touch, so they don't, and then you yourself wash your hands properly at the doorsteps before you enter. We have all bought Veronica buckets. The buckets with the handle in our homes we have er bleach, we have soap. Educating everybody in the home that you must wash your hands before you enter this house. We change uniforms, when you get into the hospital the uniforms will be here and then when you want to go to other places you also change these uniforms and footwear. We put like a sponge on the floor so that when you are getting in, you don't know what you have been stepping on, you can now step on that sponge to enter into your home." (IDI Western Area 1, Health Worker, Female)

Other health workers talked of other methods of coping: preparing themselves mentally before going to work; avoiding reading the Ebola updates; isolating themselves as they cannot live with the thought of infecting someone else; and knowing that Ebola will eventually end and will leave Sierra Leone.

“In the health facilities because each time you are coming you may not be sure of what you are coming to receive. So you just brace yourself up at home - this is what I have signed to do. But I did not sign to come and die so to yourself you start thinking what am I going to do today when I get to that place. So like my text messages even the text messages about the Ebola case (as in the daily EVD updates sent via SMS), I’ll postpone. I will wait when I’m feeling a little better to be able to look at them. But like in the hospital ... I will just be there like in one small corner, read my books. I will think that if I take infection and if I go and infect anybody, I will never forgive myself. If I myself become infected maybe I will not even survive it. It has really been difficult and like for us like we the carers, with the love we have not been having from the populace they have not really appreciated us, it has been a difficult one for me. In the vehicles (as in commercial vehicles), they don’t want to sit by us. Relationships, people don’t want it and so it has been a difficult one but to cope with it we just look on and I think that this Ebola will finish. You know it will go away from the community and then we will come back to our normal lives and that’s what we have been looking up to and that’s what has given me hope.” (IDI Western Area 1, Health Worker, Female)

One health worker reported that recalling what happens to people with Ebola and reliving these experiences, stopped them from sleeping, so that they took sedatives.

“That has been one of the things that I’ve been battling with you know erm having these erm this feeling for them, especially when they’re suffering, you have some that can’t sleep, some people bleed from their nose and their eyes, from all the orifices in their body, some complain of extreme chest pain, some people get agitated. You know it’s not good to see. You know most of the time at night, I had to take sedative for me to sleep.” (IDI Western Area 5, Health Worker, Male)

Social media platform

A social media platform was set up by some frontline health workers during the outbreak to help them cope with the stresses of working in the Ebola outbreak, and provided encouragement and support. One health worker also talked about t-shirts for all the “Ebola heroes”.

“We have a WhatsApp group about Ebola fighters and you should see the text messages. It’s incredible like you get up in the morning at 6 in the morning and all of them, it’s like ‘please remember to play safe in the unit’, ‘we have to take care of each other’, ‘come on guys we can do it we are going to kick Ebola out of the country’. It’s amazing, its quite crazy, we get like 200 messages a day. We made a lot of workshops about the stigma and the psychological support and everything and how they were feeling and if they felt they were protected by the rest of the hospital, if they were rejected or not. And we did like some t-shirts for everyone to be wearing in the hospital like ‘I’m proud of being an Ebola hero’, because they are heroes. And we have been working with that kind of psychological support the last two or three months and they are so proud, so amazing. And you see how the rest of the hospital, now everybody envies them and everyone is jealous of them.” (KII Western Area 4, Female)

Workshops and training

Psychosocial support was also given to health workers in workshops. Social workers and mental health workers helped them cope with the stigma of being a health worker.

“We have er social workers and mental health workers, really they conduct training, talk to us about the stigmatisation, what not to do, what to do, so really we are now calm.” (KII Bonthe 2, Male)

“I know that we provide psychosocial support for our staff. But I have no idea what was in place before. I guess for the people working in our centre there has been a change, because they have been working in Ebola and they never did that before. So there has been a change and I don’t know what extent they needed psychosocial support before.” (KII Kenema 3, Male)

Training and availability of personal protective equipment helped health workers feel more able and confident to cope with managing the outbreak. Knowledge was shared between all type of health workers, and health workers found this useful and supportive. For those working in hard to reach areas, the managers of facilities ensured that any training they acquired was passed on to the rest of the team.

“The training and we were given a lot of protective gears so that helped the situation. When you had a lot of protective gear you felt more confident to go in there to your patients.” (IDI Bonthe 3, Health Worker, Female)

“Our in charge whenever she go to any workshop, when she comes she will call us and train us and advise us to take time for this sickness. Whenever they call her for any suspected case, she will tell us that that patient coming in, you have to protect yourself because we don’t know the status.” IDI Kenema 6, MCH Aid, Female)

Coping financially

There were several ways that health workers coped financially during the outbreak. The volunteer health workers spoke of the hope that they would be put on the payroll and become a member of the government health sector. Health workers and their families relied heavily on the risk allowance (see below). The risk allowance was meant to compensate for the increased costs of food during the outbreak. However, people still found it difficult to cope and rationed their food.

“Well there is no way we can have the money the amount if you are to eat at least 5 cup rice in your family ... you reduce it to four cups because of the prices increasing at that time because vehicles are not running and to travel from here to Freetown it cost 70 thousand Leones and hundred thousand Leones. At first we was paying 30 thousand but now because of due to the Ebola we was paying 100 because of the restriction.” (IDI Koinadugu 1, Health Worker, Male)

The practice of ‘moonlighting’, a financial coping strategy used by health workers in the pre EVD phase whereby health workers can generate a second source of income, was reported to be non-existent during the EVD outbreak. They relied on salary and the risk allowance.

“...financially maybe the salaries are still coming because like we in the health sector they will pay you directly to the bank. But if there is no other way, like people used to do other things to have money. All those were stopped because like us they told us, no injection giving at home, no home treatment because these were some of our problems. I'm a midwife, the women used to come just to ask me questions. I normally have some income from that but now when they come they will not even have accommodation. Sometimes they cannot climb my steps, they will go away. So that income was stopped there. I cannot give injections at home, so those ones all closed. I now only depending on my salary.” (IDI Western Area 1, Health Worker, Female)

4.3.5. Risk allowance

The risk allowance scheme, introduced in September 2014, was a financial incentive scheme designed to motivate health workers to work in the frontline during the EVD response. Staff eligible for the EVD risk allowance included, but not limited to, health workers in approved treatment centres, holding centres, community care centres, EVD diagnostic laboratories, burial team, contact tracers and surveillance officers, screening or triage health workers including those in approved secondary and tertiary hospitals and selected staff in the District Ebola Response Centres (DERCs). A number of these health workers were volunteers. The policy on the eligibility for EVD risk allowance stated the receipt of this allowance did not guarantee absorption onto payroll for these volunteers.

The EVD risk allowance rates were set to reflect the actual risk of exposure to Ebola, and ranged from 500,000 Leones (approximately \$100) per week for doctors, nurses, midwives, community health officers working in approved EVD treatment centres and community care centres and all members of the burial team, to 100,000 Leones for contact tracers (see appendix 4 for the rates per week for the different categories of health workers)

There were many perceptions, both positive and negative, about the effects of the risk allowance, and the challenges in providing this allowance. In general, this allowance served as a motivating tool. A key informant reported that the risk allowance motivated health workers, including volunteers, to work in the frontline. The motivating element of the risk allowance was further strengthened with the provision of training for health workers and protective gear in the health facilities.

Positive perceptions of the risk allowance

Many health workers reported the risk allowance to be valuable. For some, it allowed them to save some money which they were unable to do with their salary alone. For others, this extra allowance compensated for the increased cost of living during the outbreak, and they spent the allowance on food and other commodities for themselves and their family.

“It closes a big gap especially me being a single parent, I have to take care of my children and even my relatives who are staying with me, so the risk allowance was very timely.” (IDI Western Area 2, Health Worker, Female)

“It motivated so many staff because just imagine maybe erm before this time when staff SECHN we are paid less than 100 dollar or 100 dollars, and now they are receiving 150 dollars or 170 dollars per month, just incentive. The health staff were happy because now their salary will be saved and they will be concentrating on their incentive which I think is a very good idea.” (KII Koinadugu 2, Male)

Some health workers reported that the risk allowance did encourage them to go to work, and improved their morale. This was also reported by some key informants. The risk allowance motivated health workers to come back to the health facilities to work, as the outbreak had deterred a number of them from working. It also motivated volunteers, a group of health workers who were not on the payroll, and local youth ‘non formal’ helpers who made up the burial teams. Provision of training and protective equipment for health workers, alongside the risk allowance, played an important role in motivating staff to work.

“I will not follow money and risk myself because at the end of the day I will die and leave the hazard pay (as in risk allowance) but with the hazard pay together with the protective gear that helps.” (IDI Bonthe 3, Health Worker, Female)

“Initially when the outbreak started erm so many people were afraid to work in the isolation or holding centres erm but then when they started paying the hazard incentives, some people voluntarily came out and then said they were going to work in those centres.” (KII Koinadugu 1, Male)

“When we started having the risk allowance people started working. Before then there were so many strikes. The burial team, when I come in the morning I have to beg them to go into the street and pick the corpse ... they will not complete that work. So I will say that the commencement of the risk allowance, it alleviated some of the problems.” (KII Western Area 2, Female)

“It made a lot of improvement in the working attitude of our colleagues ok because there was all this talk of a lot of money coming as a result of the Ebola crisis. But then those were on the front line felt they were left out to die ok. So when they started this money I saw a lot of improvement in the morale of our colleagues. For instance, I was working with very hard working nurses at the Military Hospital but some of them were doing it because they had no choice because it was a command from the Adjutant that’s where they are deployed. Ok, but when they started receiving the hazard pay also it improved on their morale.” (IDI Western Area 7, Health Worker, Male)

Some health workers and key informants reported that health workers paid more attention to patients and provided more care as they expected the risk allowance. Health workers were willing to work and provide care even to a suspected EVD case.

“I will say it improved everybody’s patient care because it motivated us.” (IDI Bonthe 1, Health Worker, Male)

“I think they give more care now and pay attention to the patients now because they know something is coming.” (KII Koinadugu 4, Female)

Other perceptions of the risk allowance

Some health workers reported that they would have worked anyway without the provision of the risk allowance. They reported that the risk allowance had no effect on service delivery. Health workers were still willing to work without the allowance. Volunteers, who are not on payroll, were reported to be dedicated to their work even when the risk allowance was two months late. Training and supply of protective equipment motivated them to work.

“You went in service to their country, there are temps even now they are still working and in 2 months the allowance hasn’t come but they are still working.” (KII Bonthe 1, Male)

“We work out of love, out of sacrifice as a nation, it’s not incentive, all the thousand to me is a pittance, 500 hundred thousand is a pittance for me. Let me tell you Ebola is more dangerous than the great big war we fought, its more dangerous because you are fighting disease that you cannot see and actually came in so many disguises which you cannot tell.” (KII Kenema 1, Male)

A few health workers reported that the amount was very small and not commensurate with the risks involved. Some health workers also thought it was discouraging that all workers received the same amount - senior cadres of health workers were receiving the same amount as non-skilled frontline health workers such as the burial team.

“You cannot compare because somebody risk their life and that kind of sum of money you are receiving you cannot compare.” (IDI Bonthe 1, Health Worker, Male)

“For us the senior staff we are getting the same amount as them, so we are not encouraged, we are not motivated, we are demotivated instead. There should be the difference. If a junior like a cleaner is having 800 thousand on a monthly basis, you the senior staff also have 800 thousand on a monthly basis that is not commensurate to your work, there should be some difference at least.” (KII Koinadugu 5, Male)

There were also concerns about what would happen when the risk allowance is removed. Managers explained that health workers came to work in order to receive the allowance, and so may not come when it is removed.

“Before the incentive was actually brought in, when we were going for supervision, we hardly meet 4 or 5 staffs in the centre, but now when you go you see 10 or 15 of them, so that’s a good effect of the hazard. But despite this good effect, it has some other bad effect. Most of them are coming because of the hazard, which means when the hazard is removed the staff also will quit the centre.” (KII Koinadugu 2, Male)

Challenges in providing the allowance

A number of challenges were reported with the payment of the risk allowance.

- **Not being paid on time**

Many health workers and key informants reported that there were delays in receiving the allowance. They reported between 3 weeks and several months’ delay in receiving the allowance. This resulted in a huge backlog, and this was demotivating to health workers. Some key informants perceived that late payment had a negative impact on patient care. It was reported that health workers had a laid back attitude when the risk allowance was late.

“I do I appreciated it but it has a lot of problems. Even as I’m speaking to you, I’ve not got my risk allowance for December, I’ve got half for January (the interview was conducted in April).” (IDI Western Area 8, Health Worker, Female)

“If they knew things were for them and they did not receive it, let’s say the Airtel⁴ money, and they will communicate with all the colleagues all over. If it had not come they will just sit back, so laid back attitude was one of the effects on health workers. If I am not motivated I will not even go, I will not care, I will not go on time after all I am not paid, why should I bother myself.” (KII Bonthe 3, Male)

- **Staff were not on the risk allowance list**

There were problems in verifying people to be on the risk allowance list. Health workers known to be working were not receiving any payment despite repeated follow ups by their managers to the National Ebola Response command centre. Other health workers including volunteers reported not receiving the allowance despite working in an affected zone.

⁴ A mobile phone provider that offer the Airtel money service, as platform to send money through the recipient’s mobile phone

“But the problem with this risk allowance - that we have some colleagues they don’t have, since they’ve started they didn’t receive any risk allowances.” (IDI Koinadugu1, Health Worker, Male)

“I was a very senior person in the place in the hospital working with affected community and there were nurses, junior nurses, people who were being paid who were not even concerned about the Ebola business. When my case came forward, they said they would not pay me because I have been away on study leave and so on and on I was working for about four months, five months before they even started. It’s about three months that I received the risk allowance so that was how it was.” (IDI Western Area 1, Health Worker, Female)

“The whole of the volunteers, none of them have received an allowance.” (KII Bonthe 2, Male)

- **Staff receive allowance but do not work**

Key informants also reported that some health workers received the allowance but did not come to work.

“There were places like at least of 100 people in a unit with ten beds and when you go there nobody is there, but there’s a list of 100 people who have been getting money every week for five months. It’s incredible, it’s unfair.” (KII Western Area 4, Female)

- **Payment system using mobile phones**

One mode of payment used a mobile phone platform where payment was sent to health workers’ mobile phones. This caused several problems: health workers had to queue up at the mobile service provider’s office to collect the funds which took them away from the health facilities; some health workers working in primary health care units did not have mobile phones so were not paid; and health workers in areas where there was poor mobile service did not receive the risk allowance. These challenges resulted in health workers being very dissatisfied and in some instances, strikes were held. Managers found it difficult to manage a demotivated health workforce, who sometimes went on strike or turned up late for work as they had to collect the risk allowance.

“But there is a lot of these problems [...] and people have to move from their communities to come to Kenema and stay there three days, four days before ever they will see their risk allowance. All these days are wasted days you know. So I think it’s something has to put in place if it has to continue for ease I mean just to ease the process.” (KII Kenema 2, Male)

“There are some who may come to work and leave early or come to work late. If you ask them they tell you they went to check for their risk allowance. And to be frank, there was no form of communication between NERC and the hospital or Airtel and the hospital so like some workers were using it as an advantage, we could not tell whether the staff were telling the truth or it was a fault on the, on the NERC people or Airtel. Some will not get it, and some are still complaining that since December they have not received hazard incentives. But we cannot tell because we don’t have any document to the effect.” (KII Koinadugu 1, Male)

4.4. Health worker and key informant suggestions for supporting the rebuilding of the health system after the Ebola outbreak

4.4.1. Building back community trust in the health system

Health workers reaching out to the community

Many health workers and key informants reported that health managers and health workers need to speak with communities, to rebuild relationships with people in order to regain trust in the health system. They described several ways to do this: radio programmes, newspapers and posters that talk about the health facilities being for the communities, the services that are provided and the need for continued surveillance of Ebola. They explained about the importance of continuing health education activities with community members, including infection prevention and control, and observing for signs of Ebola. A few highlighted the need for health education in schools, recognising the importance of educating children. One health worker highlighted the importance of sharing information with communities and not having secrets as this encouraged the spread of rumours and misinformation.

“Well the social mobilisation should be more emphasised because it has been helping. Some of these patients didn’t come the time Ebola outbreak started; they thought we the health workers brought the Ebola so they were afraid of us. But we, the social mobilisation that was giving all over going on radios, talking to people and when they come they get their treatment, get well and go back. That made them start coming to the hospital. But for the first 3 months the hospital was empty.” (IDI Bonthe 3, Health Worker, Female)

“Most of our school girls, school boys, students whatever, they’ve gone through it, they have a picture now of what is Ebola. The source of the virus, monkeys, wild animals and so on and so forth the message had got over, everybody knows about it. This information was not there then, but it is there now, so information is power. We shouldn’t have secrets about anything concerning health from the end users, the public, make everything available to them. They got one good advice, where there is no information particular area is fertile ground for false truths, half-truths and false rumours which will confuse the public more. So it’s better to make the public aware - what is being done, what has been done, what should be done, the commitment of the public, what we expect from the public and what the hospitals should give to the public.” (IDI Kenema 7, Health Worker, Male)

Developing good relationships with key people in the community

Several health workers and key informants reported that it was important to develop or re-establish good relationships with key members of the community such as chiefs, local councillors, religious leaders and traditional healers. They felt that if they could garner their support, it would be easier to build trust with the communities.

“We need to involve the stakeholders, the chiefs, the paramount chiefs, the religious leaders like the imams, the pastors. Sensitisation, teach them about Ebola so that they will have they will also pass the messages, the health messages to their congregation during church services and also Muslim services and also the chiefs because they are opinion leaders - people respect their opinion. You need to also build their capacity so that they will be informed, well informed. For instance, for Koinadugu since the reason why we had the Ebola very late it’s because of the public participation.” (IDI Koinadugu 2, Health Worker, Female).

Making sure that services are provided when needed

Several health workers and key informants reported that communities needed to be confident that health facilities provide the services that they are supposed to provide. They explained that drugs, materials and equipment should be available at all times, and that health workers should be in the facilities and be caring and responsive to their needs. They also stressed that community members should not have to pay for services or drugs if they are eligible for free health care.

“If you had to admit this case there is no bed to admit this case. The patient will go back home, they will never come here anymore and if this person came to the hospital even if this patient is admitted into the ward and there is no medicines they will just go home and they will never come here anymore. They will say ‘ah that hospital they don’t have medicines, they don’t have bed, they don’t have even lights’. So these are problems so we need to support these areas.” (IDI Koinadugu 1, Health Worker, Male).

“Community confidence. We the health care providers make sure we treat their health problems with seriousness. How can we do this? We are at our places of work. We report there on time and when they come we show concern to them [...] Each one of those patients visiting us in the hospital will go back to the community and say ah, there's a lot of reform in the hospital, we are now being treated nicely. We are treated promptly. And there should be drugs without cost recovery or free healthcare, there must be drugs provided in the hospital. Care must be centred, what I mean is that in one setting what the patients wants must be provided there. For example, if a patient comes consult the doctor, if she wants scan done it should be done in that same centre, she doesn't have to be moving around finding what to do. And prompt referral so that it is smooth that one can build their confidence and we as healthcare providers.” (IDI Western Area 3, Health Worker, Female).

“Where I work there are reports of patients being charged to see doctors and patients being charged to access for what should be free government healthcare medicines. And the perception of some of these hospitals are damaged in the eyes of the community because they feel they are being charged unfairly or unnecessarily.” (IDI Western Area 9, International, Health Worker, Male).

Involving community in decision making about the health services

Several health workers and key informants reported that community members should be involved in making decisions about the health services in their community. They felt that this would help them realise their role and responsibilities in the health of their community, develop ownership of their health facility and strengthen relationships with health workers. They suggested that this could be done through the facility health committee and the village development committee.

“We should improve on community ownership so that we let them know that this is the facility and that it is here to benefit them. Let them know that they have a role to play. Once they know that they have a role to play, they are involved in the decision making, then we will have a team to work with. Now if you don't do that, whatever you are planning up there (as in at a higher level) is not going to work. So if we have that bottom to top approach it will help us more.” (KII Bonthe 1, Male).

“Community involvement, community ownership. We will not succeed honestly if we lost focus on the community people. If we want to work on our own, we say because we are the Ministry of Health, you know we have the capacity to do a, b and c at the end of the day we

will fail. You know this country has failed once. After the war we should have rebuilt this country, but we failed because we didn't involve the community people into our, you know, into our planning. So because of that we went on and put up structures for them that they don't need. If you go to xxx there is a big market, built for them. They don't use because the community people haven't got involvement into the whole process. But now we need the total involvement of the community people. Let them tell us what they need in the area of health. Do you need a well-built structure and equipment? Let the answer come from them, 'yes, we need it'. Why do you need it? 'Because we are having several deliveries being done out of the health centre' or they can tell you 'because we are losing so many erm pregnant women' or as the case may be. So you will now have a strong evidence why they need that thing. So if we fail to include them in the planning, we will fail for the second time to rebuild this country." (KII Koinadugu 2, Male)

Role of close to community providers

Several health workers explained that close to community providers such as Traditional Birth Attendants and Community Health Workers could help make the links between communities and the health system. These health workers are generally respected within their communities.

"The community empowerment, community empowerment, in the sense we have CHWs in their communities. These are their own children. If we train them and give them the message to relay it to their people they will listen and if we also go on the radio continuously to sensitise about the effect about how they should welcome health people, how they should forget and work as one, then it will work. Because like in primary healthcare these are three corner stones, you get two it will not work well, if you had the three the government, the community and the health people." (KII Bonthe 3, Male).

4.4.2. Rebuilding the health system

Strengthening the infrastructure

Several health workers and key informants reported that the triage system set up during the Ebola outbreak should be continued as it is an effective and efficient way of identifying patients needing urgent treatment, as well as ones who are potentially infectious. They also suggested that the holding centres be maintained for another year in case Ebola returns. Others suggested that each hospital has a dedicated isolation ward that is adequately staffed and equipped at all times.

Many health workers explained that it was important for the facilities to have a reliable source of electricity either through solar panels or a generator (with adequate supply of fuel), and running water so that they could provide 24 hour services.

A few health workers suggested that facilities should be renovated by either constructing new buildings or repairing and painting old buildings.

One key informant suggested that the laboratory set up in Kerry Town during the Ebola outbreak should continue to provide services.

"Yes I recommend that the triage and the holding centre should remain for some time, even a year or 6 months that for the screening of patients. [...] So I recommend triage to stay and the holding centre to stay and all the staff sacrificing and do this work and triage and the holding centre need to be encouraged by paying them and even support. This is my recommendation and my recommendation is the drugs, the medicines for the holding centre

and the document like A4 papers for the triage should not be short” (IDI Kenema 1, Health Worker, Male)

“Now we have seen the usefulness of such an isolation unit. I believe all other hospitals there should be an isolation unit. Let’s have an isolation unit standard whether we have the cases now or we don’t have the cases. Now those isolation units should be manned and always kept prepared for receiving isolated cases because if we go by the principles of detecting, isolating and treating then we can control these epidemics. These are the structure that we must emphasise now we have seen the usefulness of them. We should maintain them.” (IDI Kenema 7, Health Worker, Male)

“They are already established a lab. Let it be a standardised lab and permanent at Kerry town.” (KII Western Area 5, Female)

Ensuring adequate drugs, supplies, equipment and transport

Many health workers and key informants reported that there should be a ready supply of the most commonly used drugs in the facilities and that they should be free of charge to the patients. They explained that patients would otherwise go directly to the drug store rather than visit the health facilities.

Many respondents also reported that the government should supply more beds and mattresses to compensate for the ones destroyed after being used by patients with Ebola.

Adequate equipment and materials such as personal protective equipment, gloves, soap and disinfectant should also be provided, so that staff are prepared for emergencies and can respond safely without putting themselves or others at risk. One health worker explained that without the necessary equipment and materials to their job safely, health workers do not feel valued and are demotivated.

Many health workers and key informants reported that there should be more ambulances available, preferably at all hospitals and health centres. Some also suggested that vehicles such as cars or motor cycles should be available for staff to conduct outreach activities.

“Imagine if you asked for gloves to wear and somebody you have asked for ten boxes, you are given two boxes. If the nurses know, they will have the feeling they are not being treated with seriousness that their lives are being put just like that so that one should be paramount. They should make sure we are provided with those things. Our motivation should be in their hands.... The work environment should be made conducive. A safe nurse, a safe workplace can provide a safe profession then a safe patient care, good quality care will be provided.” (IDI Western Area 1, Health Worker, Female)

“We were having another 400 beds and mattresses, we destroy all of these things because when you admit an Ebola patient here that mattress and that bed has to be destroyed.... the WHO managed to replace and we have some donors, like our brothers Youth in Development Action gave us 50 mattresses and some beds. This actually we appreciate it. As I said before the Ebola our bed capacity was 350. Now as I tell you we have 222 mattresses and 243 beds, so we are not yet to the maximum capacity.” (KII Kenema 1, Male).

“Then some medical equipment in the wards needs to be standby and all protective equipment need to be present in the wards, all the wards as standby. These are there to protect the nurses and all health workers on the ward. And the training - how to resist things,

these items and how to protect themselves on their duty - that is my recommendation.” (IDI Kenema 1, Health Worker, Male)

Financially supporting the health sector

Many health workers and key informants recommended that the government should prioritise the health sector and provide sufficient resources to strengthen the health system. They felt that there was a focus on the health system whilst the Ebola outbreak was on-going, but once it has ended, then there is a considerable danger that the politicians will forget about the health sector. They also called for greater accountability within the financial system through better monitoring of how the money allocated to the health sector is spent.

One key informant explained that health workers should be able to say no to working in an unsafe environment e.g. no PPE in the facility. He implied that the government should be held accountable for providing safe environments in which health workers provide services.

One key informant explained that the government should focus their support on peripheral health units. These are the first facilities that community members access and they should be strengthened to help rebuild the trust between communities and the health system.

“Definitely that’s an open secret that we are caught pants down as a country. Our health system was anything but defunct, ok it was very very defunct and then basic supplies were not there. And one thing that people may blame is lack of accountability on how the funds are spent. So I think if that should be improved to ensure that the right supplies are there and to ensure that monitoring is very robust to ensure that once these supplies are brought for any purpose they are used for that purpose. People should be taught to say no to whoever if they are not provided with the right materials to work and I think this country saw that with Ebola and I think it’s the right thing. I was very very happy when health workers were saying no, we are not going to work until you provide us with the supplies, that is far far better than health workers saying we are not going to work until you pay us.” (IDI Western Area 7, Health Worker, Male)

“After it all, politicians will soon forget to be providing PPEs and other logistics to handle. And I’m sure this is the time now we should actually tighten up our belts to actually see we are strengthening the health system. How can you provide structure if the logistics are not there, if the human resources is there but they are not capacitated properly? How do you think we can cope with these issues? I am telling you the health system still we are not yet sober, we are not yet sober as a country because I’m saying just look at the first allocation the Government has done, the Government has actually dished out to ten tertiary Hospital 2 billion Leones for first 3 month, I can say to you it’s not even pittance it’s a pit” (KII Kenema 1, Male)

Focusing on the surveillance system

Several health workers and key informants reported a need to strengthen the disease surveillance system throughout the country. They gave two concrete ways to do this: train and mentor Sierra Leonean epidemiologists; and train community health workers as surveillance officers.

“Well the Ministry of Health should be in readiness for any outbreak, not for only Ebola, we have other epidemic disease like cholera and others. They should be ready to handle any epidemic disease. Then of course they need to strengthen the surveillance because

surveillance is very key towards any epidemic. Need to strengthen the surveillance team in the office.” (KII Bonthe 2, Male)

“The surveillance in this country is weak. I don’t know whether we understand what surveillance is really, I am telling you my brother we do not understand. Surveillance is key pivotal role to the eradication to actually putting break in the transmission chain, surveillance is very serious. But what they are saying in this country, they quarantine one district, another district is not quarantined so that is why we are not yet serious because if we need to actually tackle these issues my brother, this should not be political.” (KII Kenema 1, Male).

“Yes I'm in the area of ownership, I just want to look at local surveillance officers being trained in the communities. Because mind you these diseases are coming from the communities and they have to be tracked right down the community. If we don't have surveillance officers that will surveillance these diseases they will come from the smaller community to the bigger ones, to the towns, to the district headquarter then it will just go like that. But if we start right there - we employ surveillance officers like how we are doing now, let emphasis be placed on these community health workers. Because they are our eyes in the communities, where we cannot reach, they can reach there and do things for us. If can just encourage them by you know paying them a little money, you know I think we will have a better result in terms of health care and delivery.” (KII Koinadugu 2, Male)

Role of the DHMT

Health workers and key informants explained that the DHMT plays an important role in the health system. Areas to strengthen include: better maintenance of facilities and vehicles; improved supervision of staff; better planning of activities through use of annual work plans; and improved collaboration with MoHS and other partners.

“I will advise let there be a system. I think all what is happening is like we don't have a system. If there's a system, things like that will not happen. Because where people have systems that are well designed, every DHMT or health sector at the start of the year will have their annual work plan in which they put activities that should be implemented for that year. So even if you are coming from the diaspora to help, you should abide what is in that plan. But you should not come with a different plan and implement it.” (KII Bonthe 3, Male)

4.4.3. Strengthening the health workforce

Provide in-service training

Most health workers and key informants reported that frequent in-service training is required. They thought that all levels of health worker including doctors, nurses, CHOs, health assistants and laboratory staff should receive regular refresher training to maintain their skills and knowledge, and for career development. They gave a range of topic areas for training which included: infectious diseases, infection prevention and control, and how to manage emergencies. One key informant explained that there should be training opportunities for non-technical staff who were recruited during the Ebola outbreak in the peripheral health units, in order to retain them in these facilities.

“Also to improve human resource and also training because capacity building is also very important because before now we are not really equipped. Some of the nurses they are not really trained in handling some infectious disease but after the training they were even

confident enough to go and fight. So capacity building is very important.” (IDI Koinadugu 4, Health Worker, Female)

“I think as mentioned earlier you need proper professional development course for people after they leave medical school and nursing school. You need continuous on the job training, you need more courses for your junior doctors - they should not just go out and be left as medical officers. They need courses, they need postgraduate training programmes so that they can specialise, so they can stay up to date with new medicines. Your nurses need continuous training on infection prevention control, you need to explore the roles of nurse practitioners and how the people can develop.” (IDI Western Area 9, Health Worker, Male).

Improving supervision

Many health workers and key informants reported that supervision of health care staff should be improved. Supervisors in the facility and at district level should provide support, correct any mistakes, and ensure that infection prevention and control practices and protocols are followed. A few key informants described how skilled, knowledgeable and motivated staff should be encouraged to support and mentor other staff.

“We need proper thorough training, supervision and monitoring. When I say supervision its supportive supervision because you cannot supervise somebody without supporting. I am a CHA, I think it will be better for somebody like a CHO, a principal CHO, Chief CHO to supervise me or a medical doctor. I mean he or she will correct my mistakes so I will know myself, I will evaluate myself and the way I am. Then I mean they should encourage people to live in the local settings because most of our cases are coming from the local settings, from the interior, because they should protect these borderlines and sensitisation and awareness should be ongoing then surveillance and contact chasing should be always active.” (IDI Koinadugu 5, Health Worker, Male)

“Another thing is the monitoring, monitoring of personnel being posted to health facilities to work because what is now happening is that some healthcare workers especially junior cadres know very well that authorities in the ministry or politicians are not regularly visiting the facilities. So some can even leave their workstation and then move, leaving non-trained personnel there. Let me say nursing aids in charge of big institutions which is very very wrong. So I think it should be a priority to monitor the activities of staff and health personnel being posted to health facilities so as to improve on the healthcare delivery system.” (KII Koinadugu 5, Male).

Salaries and financial incentives

Most health workers and key informants reported that adequate financial support is essential for retaining and motivating staff to provide services. They identified that salaries and any allowances such as the remote allowance or risk allowance should be paid in full and on time. Some respondents reported that their salaries had not been re-assessed for many years and felt that they should be increased. Others reported that some staff were not on the payroll and were therefore not receiving any salary.

“That’s one of the key problems that we have, we have not received remote allowance. It is really a problem because we are working in a remote area so I actually should have it. If we are not, I wonder who is getting it.” (IDI Bonthe 1, Health Worker, Male)

“And secondly improving and encouraging the technical and the non-technical staff, that is putting those not on payroll on payroll then those that deserve reassessment you reassess them and increase their pay. Like for me I am just from xxx, I am a CHO, I did ophthalmology but I have not been reassessed.” (KII Bonthe 2, Male).

“To give more encouragement to health workers that are going to the extreme (as in remote) part. It’s like for example if all health workers with one kid are paid 50 thousand for example, if I’m up to go to another 50 miles off the district headquarter town, I must have another incentive given me and when I go to those areas I need to have mobility and good housing, at least so that I will be encouraged to stay.” (KII Koinadugu 3, Male).

However, one key informant reported that incentives such as the remote allowance and risk allowance should not be continued as health workers become reliant on receiving them:

“In terms of incentive, in fact the incentives should be stopped because when the incentives are not attached to it, people will stop it. Because there are other benefits you get, other incentive, but when the incentive are attached to it, I always want it. Yes. So those are, in future, those are the things we should plan, they should plan.” (KII Bonthe 3, Male).

Accommodation and transport

Many health workers and some key informants reported that accommodation should be available at the health facility. This would improve staff attendance at the facility, reduce travel costs for staff and reduce the risk of staff being asked to leave privately rented accommodation as was seen during the Ebola outbreak.

Some health workers suggested that transport should be provided to health workers in remote area so that they can do outreach work.

“And housing facilities also is another problem. If they had built quarters where we have nurses residing, the communities would not have rejected them in their homes.” (KII Kenema 2, Male).

Welfare for families of health workers who died

A few health workers and key informants reported that some financial support should be given to families of health workers who died from Ebola. They felt that families, particularly those with children, had been neglected.

“We have been the frontline workers, the nurses. We should not be forgotten because our colleagues have died in this process and those colleagues their family members some had children. We had nurses dying as young as 24 years. Some have left their children behind. There should be some welfare fund set aside particularly to take care of the departed colleagues their children.” (IDI Western Area 1, Health Worker, Female).

5. Discussion

In terms of challenges which existed prior to Ebola and which affected responses to it, the factors cited by respondents - poor working environment, inadequate numbers of health workers, limited in-service training and delays in health workers receiving allowances - are corroborated by recent articles such as Wurie and Witter, 2016, and also the findings of the recent Free Health Care evaluation (Witter et al. 2016). Some aspects such as referral transport may have been improved as part of the response to Ebola (i.e. improved over the limited services available before).

Specifically, in terms of readiness for Ebola, the lack of triage facilities, of training in infection prevention and control, of protective equipment and laboratories, instruments and supplies is consistent with other reports on the Ebola epidemic. For example, an UNICEF survey carried out in October 2014 found that health personnel in 37% of the PHUs felt they were not provided with adequate training on Ebola, 15% identified lack of information about Ebola as a challenge, an overwhelming 90% felt fear/misconception as being the main challenge confronted by the health system to fight Ebola, 87% reported lack of protective gear as a large gap and 26% reported lack of medicines as a big constraint (UNICEF 2014).

Staff took on duties during the epidemic for a variety of reasons, including volunteering as they recognised the need to support the response and wanted to serve their community, being mandated, and seeing it as part of their on-going role. For volunteers, previously not on payroll, there were both intrinsic and extrinsic motivations (e.g. wishing to join the staff eventually). For international volunteers, there was a sense of having skills in demand, which was the driving factor.

All staff received training, and the content was seen as adequate, though improving over time (i.e. at first, the content was less developed as the experience of the epidemic was new). The training focused on clinical aspects, which is not surprising as there was limited knowledge and skills of managing Ebola, and was therefore seen as a priority. There was little training on communication and relationship building with communities. Although trust between health workers and communities can be developed through providing better services, some training could have helped to strengthen these relationships more quickly. The 'routine' actors, like health facility managers and district health teams, felt side-lined by the resources and powers which new players, like NGOs and emergency structures had, compared to their own. Many reports now recognise the need to put in place governance structures which are less damaging and prepare for the longer term (Quinn 2016). The new emergency structures did not always build on the knowledge of existing teams as well as they should. The delay in responding, which had national and international dimensions, as well documented, was one of the main challenges (International Rescue Committee 2016). There were however also positive examples of good local coordination, bringing together local stakeholders with expertise and effectively linking with communities.

While the risk allowance helped health workers to manage and motivate themselves, there were concerns about delays and gaps, as well as who received the allowance and how it was set. Providing health workers and managers with clear information about the risk allowance and what it is for can help to dispel potential frictions. This illustrates a familiar theme with incentives – that, while sometimes practically necessary, they are also capable of generating many tensions (Wurie and Witter 2014; Bertone et al. 2016).

In terms of impact, the study provides striking evidence of some of the negative effects on staff, including being isolated from neighbours and communities who no longer trust them; in some cases, being ostracised by them (with continuing consequences in some cases); no longer trusting patients

themselves; family consequences (having to isolate yourself from your nearest to protect them, and in some cases, being prohibited by them from working); the trauma of watching colleagues die and fearing for yourself; and economic hardship due to reduced earnings. In the workplace they often reported stress and overload, and a continued struggle to get the supplies they needed, and some reported distrust between staff – for example, between those in general and treatment facilities. Managers were supportive in some but not all cases.

Health workers and key informants reported a range of strategies to cope with the effects of Ebola on their professional and personal lives. They included coping strategies that are provided externally such as training, workshops, financial support, and the social media platform; and those strategies that draw upon existing mechanisms such as being sustained by religion, a sense of serving their country, peer support and family support. These are similar to the coping strategies documented in an earlier study (Wurie and Witter 2014), with the addition of innovations made during the Ebola outbreak (e.g. the social media platform). Peer and manager support come out strongly from the interviews; in the context of an emergency, these non-financial, professional support approaches are likely to be even more powerful motivators than in stable contexts. This point is also made by a recent related study from Sierra Leone (McMahon et al. 2016).

The participants emphasise the need to re-establish not only services but strong links with the community, to regain their trust and involvement. Using the opportunity to 'build back better' they suggest that health facility committees should be strengthened and the community health staff used more effectively to link communities and health facilities. This is indeed anticipated in the post-Ebola plans including the Health Sector Recovery Plan 2015-20 (MoHS 2015) and in the new Community Health Worker policy, which is currently being finalised. Some of the infrastructure which was created in response to Ebola should now be effectively incorporated in the health system, and the outstanding gap area (such as limited drug supplies) filled. This fits with recent reports, such as the FHCI evaluation (Witter et al. 2016). There is also widespread acceptance of the need for better supervision of staff, stronger surveillance systems, improved working conditions and specific support for families whose members contracted Ebola in the line of duty.

The participants highlight the responsibility of the government to provide a safe health system – safe not just for patients but also staff. Almost 900 health-care workers were infected with Ebola and more than 500 died, and there is now a recognition that psychosocial support for them will need to be long-term (Van Bortel 2016). There is an accepted need to plan for a sustainable health sector, beyond the period of immediate post-Ebola investment. A recent fiscal space study highlights the financial and resourcing gaps and some ways of closing them (OPM, 2016).

Several recommendations for rebuilding a resilient health system post-Ebola outbreak emerge from our analysis of the findings from this study. These include:

1. Maintain and build on infection prevention and control practices in order to contain future outbreaks:
 - a. Improve knowledge and skills through a regular programme of in-service training for health workers and supportive supervision
 - b. Maintain isolation wards with essential equipment
 - c. Institutionalise the triage system in all facilities
2. Rebuild the trust between the health system and community structures:

- a. Strengthen the health facility committees so that they take a more prominent role in decision making
 - b. Use community health workers more effectively to link communities and health facilities
3. Build on health workers' existing coping strategies:
 - a. Strengthen peer support networks
 - b. Make better use of ICT to support health workers
 4. When financial allowances are introduced, ensure fair and transparent allocation, as well as a practical and effective mechanism for distribution.

6. Conclusion

This study is the first in Sierra Leone since the Ebola epidemic to solicit the views of a wide range of health staff and managers in four districts on their experiences of the Ebola epidemic, how it affected them, their health system, and their communities. It engaged health managers and staff (paid, volunteers and internationals) working in routine and Ebola treatment centres, and documented their views and experiences not just on the epidemic but also how they coped through it, and what they require in the months and years ahead.

The report is bitter-sweet as it documents a very painful period with moving experiences of staff as they continued to try to work and protect their households and communities. At the same time, it is clear that considerable reserves of resilience were found, which match to some earlier studies of how staff survive in conflict zones (Namakula and Witter, 2014). These patterns of resilience must be reinforced as the sector is rebuilt. Supportive supervision, peer support networks and better use of communication ICT should all be pursued, alongside a clear programme for rebuilding trusting relations with community structures.

7. References

- Ansumana, R. et al., 2014. Ebola in Freetown Area, Sierra Leone — A Case Study of 581 Patients. *New England Journal of Medicine*, 372(6), pp.587–588. Available at: <http://dx.doi.org/10.1056/NEJMc1413685>.
- Bertone M, Samai M, Edem-Hotah J, Witter S. 2014. A window of opportunity for reform in post-conflict settings? The case of Human Resources for Health policies in Sierra Leone, 2002-2012 *Conflict and Health*, **8**:11.
- Bertone M, Lagarde M, Witter S. 2016. Performance-based financing in the context of the complex remuneration of health workers: findings from a mixed-method study in rural Sierra Leone. *BMC Health Services Research* 16:286. **DOI:** 10.1186/s12913-016-1546-8
- Government of Sierra Leone. 2009. National Health Sector Strategic Plan 2010 – 2015. Freetown: Ministry of Health and Sanitation.
- International Rescue Committee. 2016. The Ebola Lessons Reader: what’s being said, what’s missing and why it matters. New York, IRC.
- Kieny MP, Evans DB, Schmets G, Kadandale S, 2014. Health system resilience; reflections on the Ebola crisis in West Africa. *Bulletin of the World Health Organisation* 92; 850.
- McMahon S, Ho LS, Brown H, Miller L, Ansumana R, Kennedy CE. 2016. Healthcare providers on the frontlines: a qualitative investigation of the social and emotional impact of delivering health services during Sierra Leone’s Ebola epidemic. *Health Policy and Planning*, 1–8. doi: 10.1093/heapol/czw055
- Maxmen A, 2015, Frontline health workers were sidelined in \$3.3 billion fight against Ebola. *Newsweek online report*. Available online at <http://europe.newsweek.com/frontline-health-workers-were-sidelined-3-3bn-fight-against-ebola-327485>
- Ministry of Health and Sanitation. 2015. Health Sector Recovery Plan (2015 – 2020). Freetown, MOHS.
- Namakula J, Witter S. 2014. Living through conflict and post-conflict: experiences of health workers in northern Uganda and lessons for people-centred health systems. *Health Policy and Planning* 29 (suppl 2): ii6-ii14.doi: 10.1093/heapol/czu022
- National Ebola Response Centre. 2015a. *Ebola Virus Disease (EVD) Risk Allowance for Ebola Response Workers (ERWs) Policy with effect from 1 April 2015*,
- National Ebola Response Centre. 2015b. Lessons from the Response to the Ebola Virus Disease Outbreak In Sierra Leone May 2014 – November 2015. Summary Report. , (May 2014), p.26.
- OPM. 2016. Fiscal space analysis: FHCI and UHC in Sierra Leone. Oxford, OPM.
- Quinn M. 2016. Governance and Health in Post-Conflict Countries: The Ebola Outbreak in Liberia and Sierra Leone. New York: International Peace Institute.
- Ritchie J, Spencer L, O’Connor W. 2003. Carrying out qualitative analysis. In: Ritchie J, Lewis J, eds. *Qualitative Research Practice: A guide for social science students and researchers*. London: Sage Publications, 2003: 219-262.
- Schieffelin, J.S. et al., 2015. Clinical Illness and Outcomes in Patients with Ebola in Sierra. , 371(22), pp.2092–2100.

UNICEF. 2014. Sierra Leone Health Facility Survey 2014. Assessing the impact of the EVD outbreak on health systems in Sierra Leone.

Van Bortel, T, Basnayake A, Wurie F, Jambai M, Koroma AS, Muana AT, Hann K, Eaton J, Martin S, Nellums LB. 2016. Psychosocial effects of an Ebola outbreak at individual, community and international levels. *Bulletin of World Health Organisation* 94;3:210-4. doi: 10.2471/BLT.15.158543

Wang, L. et al., 2015. Epidemiological features and trends of Ebola virus disease in West Africa. *International Journal of Infectious Diseases*, 38, pp.52–53. Available at: <http://dx.doi.org/10.1016/j.ijid.2015.07.017>.

Wauquier, N., Bangura, J., Moses, L., Humarr Khan, S., Coomber, M., Lungay, V., ... Gonzalez, J. P. (2015). Understanding the Emergence of Ebola Virus Disease in Sierra Leone: Stalking the Virus in the Threatening Wake of Emergence. *PLoS Currents*, 7,

Witter, S. et al., 2012. Understanding health worker incentives in post conflict settings http://apps.who.int/iris/bitstream/10665/137510/1/roadmapsitrep_5Nov14_eng.pdf?ua=1

Witter S and Wurie H. 2014. Health workers are in the front line but should not be at the back of the queue after Ebola. <http://blogs.lshtm.ac.uk/hppdebated/>

Witter S, Brikci N, Harris T, Renner A. 2016. The Sierra Leone Free Health Care Initiative (FHCI): process and effectiveness review. Technical Report. Oxford, Oxford Policy Management.

WHO. 2006. World Health Report. Geneva: World Health Organisation.

Wolz, A., 2014. Face to Face with Ebola — An Emergency Care Center in Sierra Leone. *New England Journal of Medicine*, 371(12), pp.1081–1083.

Wurie H and Witter S. 2014. Serving through and after conflict: life histories of health workers in Sierra Leone. <http://www.rebuildconsortium.com/publications/documents/IDreportSLfinal230614.pdf>)

Wurie H. 2014a. Ebola's collision with the Sierra Leone post-conflict health system <http://www.healthsystemsglobal.org/GetInvolved/Blog/TabId/155/PostId/27/ebolass-collision-with-the-sierra-leone-post-conflict-health-system.aspx>

Wurie H. 2014b. An update from the frontline of health systems research in Sierra Leone <http://rebuildconsortiumconnect.wordpress.com/2014/10/30/an-update-from-the-frontline-of-health-systems-research-in-sierra-leone-by-dr-haja-wurie/>

Wurie H, Samai MH, Witter S. 2014. Staffing the public health sector in Sierra Leone, 2005-11: findings from routine data analysis. <http://www.rebuildconsortium.com/publications/index.htm>

Wurie H, Samai M, Witter S. 2016. Retention of health workers in rural Sierra Leone: findings from life histories. *Human Resources for Health* 14;3. DOI: 10.1186/s12960-016-0099-6

8. Appendices

Appendix 1: Detailed lists of participants

In depth interviews with health workers: characteristics

Label	District	Place of work	Cadre	Sex	HRH cohort
IDI Bonthe 1	Bonthe	Health facility	CHO	Male	No
IDI Bonthe 3	Bonthe	Health facility	SECHN Nurse	Female	No
IDI Kenema 1 national	Kenema	Ebola treatment centre	SECHN Nurse	Male	No
IDI Kenema 2 national	Kenema	Ebola treatment centre	Nurse aid	Female	No
IDI Kenema 3 national	Kenema	Health facility	Lab technician	Female	No
IDI Kenema 4 international	Kenema	Ebola treatment centre	Doctor	Male	No
IDI Kenema 5 international	Kenema	Ebola treatment centre	Nurse midwife	Female	no
IDI Kenema 6 national	Kenema	Health facility	MCH aid	Female	No
IDI Kenema 7 national	Kenema	Health facility	Doctor	Male	Yes
IDI Koinadugu 1 national	Koinadugu	Health facility	CHO	Male	Yes
IDI Koinadugu 2 national	Koinadugu	Health facility	Nurse	Female	No
IDI Koinadugu 3 national	Koinadugu	Health facility	SECHN	Female	Yes
IDI Koinadugu 4 national	Koinadugu	Health facility	MCH aid	Female	No
IDI Koinadugu 5 national	Koinadugu	Health facility	CHA	Male	No
IDI Koinadugu 6 national	Koinadugu	Health facility	Nurse	Female	Yes
IDI Western Area 1 national	WA	Health facility	Nurse	Female	Yes
IDI Western Area 2 national	WA	Health facility	Midwife	Female	No
IDI Western Area 3 national	WA	Health facility	Nurse	Female	Yes
IDI Western Area 4 national	WA	Health facility	Midwife	Female	Yes
IDI Western Area 5 national	WA	Ebola treatment centre	Doctor	Male	No
IDI Western Area 6 national	WA	Health facility	MCH aid	Female	No
IDI Western Area 7 national	WA	Ebola treatment centre	Doctor	Male	No
IDI Western Area 8 national	WA	Ebola treatment centre	Nurse	Female	No
IDI Western Area 9 international	WA	Ebola treatment centre	Doctor	Male	No
IDI Western Area 10 national	WA	Health facility	Nurse	Male	Yes

Key informant interviews: characteristics

Label	District	Sex
KII Bonthe 1 National	Bonthe	Male
KII Bonthe 2 National	Bonthe	Male
KII Bonthe 3 National	Bonthe	Male
KII Bonthe 4 National	Bonthe	Female
KII Bonthe 5 National	Bonthe	Male
KII Kenema 1 National	Kenema	Male
KII Kenema 2 National	Kenema	Male
KII Kenema 3 International	Kenema	Male
KII Kenema 4 National	Kenema	Female
KII Koinadugu 1 National	Koinadugu	Male
KII Koinadugu 2 National	Koinadugu	Male
KII Koinadugu 3 National	Koinadugu	Male
KII Koinadugu 4 National	Koinadugu	Female
KII Koinadugu 5 National	Koinadugu	Male
KII Western Area 1 National	WA	Male
KII Western Area 2 National	WA	Female

KII Western Area 3 National	WA	Male
KII Western Area 4 International	WA	Female
KII Western Area 5 National	WA	Female

Appendix 2: Data collection tools

Key Informant Interview Guide

Background

- 1) Can you tell me what your role is in the health sector?
- 2) Can you tell me what your role is in the Ebola response?
- 3) How long have you worked in this role?
- 4) How did your role in the Ebola response come about?

Ebola-readiness

- 5) What do you think about the readiness of the health workforce to respond to the outbreak?
 - Probe on health worker knowledge and perceptions of Ebola and transmission, skills of health workers, equipment, infrastructure
- 6) Did you feel that the health workforce was adequately trained/prepared to work effectively and confidently in this response?
 - If not, what did you feel they lacked training in?

Immediate effects of Ebola

- 7) What were the main effects on the health workforce?
 - Particularly focus on challenges relating to:
 - Ability to retain enough staff to work in the treatment and isolation centres
 - Ability to motivate them to work effectively
 - Management of HWs
 - Risk allowance
 - Probe about provision: did health workers receive, when did they receive, how much was given
 - What was the effect on the way that health workers work?
 - In what ways has it affected the way that they provide care to patients?
 - Did it affect their motivation? If so, how?
- 8) What were the prior challenges for leadership and governance and how have they affected responses to Ebola?
 - How were district services managed before Ebola?
 - What were the issues? What impact did these issues have on health workers' performance?
 - How did systems respond when Ebola came?
 - What can we learn from this in strengthening the health system in the future?
 - What has been the role of different players?
 - How well have they worked together (and if not, why not?)
 - What can we learn from this in terms of better coordination of efforts in future?
- 9) What were the prior challenges for service delivery and how have they affected responses to Ebola?
 - What were the challenges delivering services before the Ebola crisis?
 - How have services been affected by Ebola (probe into operational issues, uptake, relationship with the community etc.)
 - What could be improved if other similar epidemics come again?
- 10) How has the Ebola response affected staff?
 - Have there been any changes in relation to:
 - Training of health workers and skills and knowledge improvements
 - Motivation of health workers
 - Emotional care of the health workers

- Working conditions

11) How has Ebola affected you personally?

- What has Ebola meant for you?
- How have you responded?
- How much support have you received?

Post Ebola rebuilding the health workforce

Based on these experiences

- 12) Which strategies should be adopted in the future to address the current challenges for health workers in Sierra Leone?
- 13) How can we improve access to health services and bridge the gap of mistrust between service users and health workers?
- 14) Any other recommendations?

In-depth Interview Guide (Local Health workers)

Background

- 1) Can you tell me what your role is in the health sector?
- 2) How long have you worked in this role?
- 3) Are you still working now? Why/why not?

Ebola-readiness

- 4) Have you worked in an Ebola treatment or an Ebola isolation centre? If yes, how did that come about?
- 5) If no, did you have to deal with suspected or Ebola confirmed cases in the health facility where you work?
- 6) How ready did you feel about dealing with Ebola?
What training have you received about Ebola? When? How long? Who from?

Immediate effects of Ebola

- 7) Tell us about your experiences of Ebola. How did it affect you?

Probe:

- Personally – you and your family
- Your community
- Professionally
- In relation to colleagues
- In relation to patients
- In relation to managers

Coping strategies

- 8) Have you managed to cope? If so, how? What did you do to help you cope?

Probe:

- Personal safety
- Emotionally
- Financially and practically

- 9) You said that you found it difficult to cope, why do you think this is?

Probe:

- lack of support from outside, fear etc

- 10) Did you receive a risk allowance? Was it valuable to you? Did it change the way you work?

General challenges

- 11) What have been the challenges faced by the facility?

- 12) How much support have you received from outside?

Probe:

- DHMT
- Local councils
- International organisations

Recommendations

- 13) What do you see as the priority now, to support you and your colleagues?

- 14) What is most important in getting health services functioning well?

- 15) How do you think we can rebuild community confidence in services?

Future plans

- 16) What are your plans for the future?

- 17) What do you think you will be doing in five years' time?

In-depth Interview Guide (for International frontline health workers)

Background

- 1) Can you please tell me a bit about yourself?
- 2) What your role is in the current Ebola outbreak?
 - Is this your first experience working in the frontline of an Ebola outbreak?
 - How long have you been in this role?
 - How did you get this job? If volunteered, what made you volunteer?
 - What training have you received about Ebola? When? How long? Who from? What was the emphasis on the training received?

Ebola Outbreak

- 3) Can you give me your overall perception of the Ebola epidemic in Sierra Leone?
- 4) What is your perception about the functioning of the overall health system?
- 5) From your experience what were the main challenges overall for the health system?

Impact on health staff

- 6) How would you describe the experiences of Ebola for the health workforce as a whole?
- 7) From your experience what were the main challenges faced by local health workforce?
 - Personal
 - Professional

Health facility challenges

- 8) What have been the challenges faced by the health facility?
- 9) How much support have they received and how effective has it been?
 - From international organisations
 - From Government
 - From the community
- 10) How have relationships between the community and health system been affected, in your experience?

Personal effects

- 11) Tell me about your personal experiences of Ebola.
 - How has the Ebola outbreak affected you personally?
 - What did you find most difficult?
 - How have you been coping?

Recommendations

- 12) From your experiences, what do you see as the priority to support the health staff here to function well in the future?
- 13) From your experiences how can the health system be better supported to function well and cope with crises in the future?
- 14) What kind of measures will be needed in the future to build a good relationship between communities and the health system?

Appendix 3: Coding framework

1. Health worker's role in the health sector
 - a) Length of service in the health sector
2. Gender
3. How did role in Ebola response come about
 - a) Volunteered in the hope of being absorbed unto the health workforce
 - b) Natural progression based on their role in the health sector
 - c) International volunteer
 - d) Local volunteer
4. Ebola readiness of the health workforce
 - a) Prior knowledge of health workers
 - b) Level of confidence and skills in working as a frontline health worker
5. Readiness at the health facility
 - a) Equipment
 - b) Infrastructure
6. Training received
 - a) Type/emphasis of training received
 - b) Timing of training
 - c) Length of training
 - d) Training facilitated by
 - e) Perception of training
7. Pre-existing challenges faced by the health sector that effected the response
 - a) Health workers ill-equipped to deal with EVD/ health workers not trained
 - b) Inadequate HRH
 - c) Incentives delayed
 - d) Lack of enablers
 - e) Limited continuing on job training
 - f) Low levels of motivation within health workers
 - g) Mal distribution of the health workforce
 - h) Poor working conditions
 - i) Retention challenges
 - j) Relationships with the community
8. Impact of the EVD outbreak on health workers
 - a) Lack of trust between service users and providers
 - b) Personal
 - c) Professional
9. Impact of EVD on Health systems
 - a) Service utilisation
 - b) Patient care
10. Impact on community
11. Coping strategy
 - a) Personally
 - b) Emotional
 - c) Financial
 - d) Professionally
12. Perceptions of risk allowance
 - a) Impact of health workers
 - b) Impact on patient care

13. Motivating factors
 - a) Absorbed on to payroll
 - b) Being of service or humanitarian
14. Challenge in leadership and management of health services prior to the EVD
 - a) Operational challenges
 - b) Service utilisation challenges
15. Leadership and management of health system prior to EVD
 - a) Impact on Health workforce management
 - b) Impact on EVD response
 - c) Role of different players
 - d) Impact on health workforce management
16. Relationships of key players in the health sector
 - a) Local relationships
 - b) International and local relationships
 - c) National-District relationships
17. Support received
 - a) Local
 - b) international
18. Recommendations to support rebuilding the health system post EVD
 - a) Health worker
 - b) Health systems
 - c) Community

Appendix 4: EVD Risk allowance rates for frontline health workers

Categories	Sub-categories	Risk allowance/week
Approved Ebola Treatment Centres (ETC) and Community Care Centres (CCC)	Doctor/Midwife/nurses/nurse aide/CHO	500,000
	Counsellor	500,000
	Waste Zone Manager	500,000
	Hygienist	500,000
	Sprayer	500,000
	Porter	500,000
	Dresser	500,000
	Ebola Lab Technician	400,000
	Surveillance officers in treatment	400,000
	Ambulance driver	400,000
	Cook	300,000
	Laundry worker	300,000
	Cleaner	300,000
	Logistics	300,000
	Watchman/security/guard	300,000
	Driver (non-ambulance)	300,000
	Carpenter	300,000
	Sensitization/awareness	300,000
	Support Staff/Admin	200,000
	Radio operator	200,000
Staff on retainer (all staff in districts that have no confirmed cases in a given week and whose facilities	200,000	
Approved Ebola Laboratories	Lab Technician	400,000
	Medical Lab Assistant	400,000
	Swabbers	400,000
	Dead Body Management	400,000
	Documentation	400,000
	Driver	400,000
	Surveillance officers in Ebola Laboratories	400,000
Limited number of Staff at approved Tertiary and Secondary Hospitals who may be exposed to Ebola through the triage and isolation of suspect Ebola patients	Same sub-categories as ETC and CCC	Same rates for sub-categories in ETC and CCC
Screening teams	Screeener	100,000
	Checkpoint staff	100,000
Burial teams	All staff	500,000
District Ebola Response Centre staff	Selected staff	100,000
Community surveillance teams	Community surveillance officers	100,000
	Contact tracers	100,000

	Contact tracers - supervisors	200,000
	Community mobilisers	100,000
	Drivers	100,000
	Checkpoint staff	100,000
	Staff on retainer (eg contact tracers in a district with no confirmed cases in a given week)	50,000

Source: National Ebola Response Centre, 2015a.