
GENDER AND VULNERABILITY TO CHOLERA IN SIERRA LEONE

Gender analysis of the 2012 cholera outbreak
and an assessment of Oxfam's response

NOELLE RANCOURT

While vibrio cholera is an 'equal opportunity' infection, it is not gender-neutral. Sex, age and social status are factors that may contribute to individuals' vulnerability to cholera, by dictating social roles and behaviours. In a society that adheres to strict gender roles, cholera transmission routes are more likely to be sex and age-specific. Despite this, the linkages between gender and vulnerability to cholera are not well understood and there is little literature on the topic. This research analyses the roles socially ascribed to boys, girls, men and women in specific environmental, economic and socio-cultural contexts to highlight groups that may be more vulnerable to cholera in Sierra Leone.

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ACRONYMS

BFV	Blue Flag Volunteers
CBO	Community-based organization
CLTS	Community-led total sanitation
CTC	Cholera treatment centre
DDPC	Department for Disease Prevention and Control
DHMT	District Health Management Team
DSO	Disease Surveillance Officer
D&V	Diarrhoea and vomiting
MOHS	Ministry of Health and Sanitation
NGO	Non-government organization
ORS	Oral rehydration salts
PHE	Public Health Engineer
PHP	Public health promotion
PHU	Public health unit
WASH	Water, sanitation, and health

EXECUTIVE SUMMARY

Is there a gender difference in the cholera disease burden in Sierra Leone?

At the national aggregate level, there is not a gender difference in the cholera burden, at least not of any significance. But when regional contexts and life stages are taken into account, there does appear to be distinct gendered patterns in the burden. According to the Directorate of Disease Prevention and Control's national database in 2012, 53 per cent of cholera cases are female and 48 per cent are male; as 51 per cent of Sierra Leone's population is female, the difference is only marginal. It has not been possible to test for statistical significance.

Regional disaggregation, however, reveals a higher frequency of male cases in Freetown and Kono District and higher frequencies of female cases in primarily agricultural districts, suggesting a more complex association between gender and livelihood zones and the vulnerability to cholera.

Analysing cholera by age and gender in Freetown and the Western Area reveals that although prevalence is higher in men overall, the highest number of cases fall within the 15 to 24 age group, and of these, most are female. More in-depth analysis of the data is required.

What accounts for gendered patterns in the data?

In a society that adheres to strict gender roles in the domestic, productive, and community settings, cholera transmission routes are more likely to be sex and age-specific.

There is a higher prevalence of female cholera cases in the rural, agricultural areas of Sierra Leone. The caretaking role of women and girls can expose them to sources of contamination in the household, particularly when caring for children and the sick. The predominance of women as rural petty traders, who travel to weekly *luma* markets in commercial centres (held for surrounding and remote villages), further increases their vulnerability to contracting cholera.

During the day, most of the men in Freetown are away from the domestic setting and are working, seeking work, or socializing. As a result they often eat and drink from locations which lack basic hygiene facilities, resulting in an increased risk of exposure to cholera; this is the likely explanation for the higher prevalence of the disease in males in the city (specifically in those aged 25 or over)

The prevalence of cholera among youth aged 15 to 24 in Freetown reflects the demographics in the city. Within this age group, there are more women than men, which may be why there is a higher prevalence of female cases, however this may also be associated with their increased vulnerability from caring for babies and children. Sierra Leone has high rates of early childbearing. In urban areas, a greater use of family planning among women in their 30s and 40s means they are less likely to be caring for small babies than in the rural areas. Women and girls with unstable socio-economic circumstances face the challenge of caring for small babies while working, for instance mobile traders who carry babies on their backs, with limited access to hygiene facilities.

What are the different ways in which men, women, boys, and girls might be vulnerable to cholera, in different contexts?

Cholera strikes indiscriminately of sex, age, and social status. However, these factors may contribute to an individual's vulnerability to the disease, by determining which social roles and behaviours they are expected to conform to, potentially affecting their exposure. These, and other factors such as health status and occupation, may therefore place certain social groups at higher risk of contracting and spreading cholera.

This report considers how gender, age, and other social factors interact with dimensions of vulnerability to cholera, including: access to safe water, exposure, awareness, hygiene practices, and environment. We analyse the roles socially ascribed to girls, boys, women, and men in specific environmental, economical, and socio-cultural contexts. Urban and rural variations in domestic, productive, and community-based roles are considered, in order to highlight groups which may be more vulnerable to contracting cholera in the midst of an epidemic. Underlying intra-household issues of access and control of resources are also considered as factors affecting vulnerability.

How did Oxfam perform in relation to gender?

Gender was not a consideration in the contingency planning and strategy, although at the level of implementation, gender criteria were included in the selection of volunteers for the emergency response, and these volunteers were briefed on the need to target all household members with public health messages, including targeting of male and female specific public gathering points. In practice, the experience of the response appears also to have played a role in profiling and empowering younger, literate females in some areas through their role as Blue Flag Volunteers.

In the short term there is a need to update aspects of cholera contingency planning to integrate key gender considerations: at the level of preparedness, with improved sex and age-disaggregated cholera surveillance, the selection of volunteers, registration of vulnerable households, and stakeholder analysis; and at the level of implementation gender, age, and occupation-oriented messaging from volunteers, as well as the involvement of schools and women and child-led, community-based organizations.

In the longer term, there is a great deal of scope for building on the gains of the response with long-term development programming, particularly focusing on CLTS and the transformation of inequitable gender roles.

1 INTRODUCTION

Cholera is a severe form of diarrheal disease caused by the bacterium *Vibrio cholerae*. In its extreme manifestation, it is one of the most rapidly virulent and fatal diseases known. Sierra Leone and West Africa have experienced recurrent epidemics. The 2012 epidemic was the worst Sierra Leone had experienced in 15 years, and the largest West African outbreak in 10 years. On 5 December 2012, as the epidemic ended, 22,740 cholera cases had been reported across the country and 294¹ lives lost, although the actual number of cases may have been higher due to under-reporting. Within 31 weeks the disease spread from its epicentre in Kambia to 12 of the 13 districts of Sierra Leone. The dispersed infection pattern has suggested that the dominant mode of transmission was from person to person.

Cholera strikes indiscriminately of sex, age, and socio-economic status. However, these factors may contribute to an individual's vulnerability to the disease, by determining the social roles and behaviours she or he is expected to conform to, which may subsequently affect exposure to the disease. These and other factors such as health status and occupation may therefore place certain social groups at higher risk of contracting and spreading the disease in a given setting.

The linkages between gender and vulnerability to cholera are not well understood. However, in a society that adheres to strict gender roles in the domestic, productive, and community settings, transmission routes are likely to be sex and age-specific.

Sierra Leone is a traditionally patriarchal society. Gender relations have evolved significantly over recent decades, in the crucible of civil war that challenged traditional hierarchies, and driven by development efforts, the discourse of human rights, the influence of Western media and pop culture, and the changing socio-economic dynamics of youth unemployment. The value placed on girls by their families; the social expectations of girls, boys, women, and men; and the notions of femininity and masculinity continue to change, particularly among the younger generations in urban areas².

Despite these changes, social norms governing the sexual division of labour and the access to, and control of, resources, are deeply entrenched, particularly in rural and more remote and inaccessible parts of the country.

This report presents a gender analysis of vulnerability to cholera in Sierra Leone and derives implications for emergency response and cholera prevention. It is divided into five parts. Part 1 introduces the purpose and scope of research and outlines the methodology. Part 2 presents a descriptive analysis of data from the national cholera line-listing database, in order to present gendered patterns. Part 3 describes the outbreak and the research sites. Part 4 analyses those roles, activities, and practices assigned to different sex and age groups, which present a high risk of exposure to cholera in the midst of an outbreak. Underlying issues of control that create barriers to accessing clean water and sanitation are examined, and levels of awareness, beliefs, and behavioural changes in the wake of the emergency are considered. Part 5 assesses Oxfam's performance in Sierra Leone in addressing the gender dimensions of the response and presents recommendations for improving emergency preparedness, implementation, monitoring, and evaluation, as well as entry points for sustainable development.

PURPOSE AND SCOPE

The primary objective of this research assignment is to assess any evidence that vulnerability to cholera is gendered in Sierra Leone. The main task of the assignment is to analyse how gender may interact with other socio-cultural and economic factors to make women, men, boys, and girls vulnerable to cholera in differing ways.

This component of the assignment encompasses aspects of the cholera outbreak, traditional gender roles, and issues of access and control. It is not a comprehensive gender analysis and its scope of enquiry is limited to those domestic, productive, and community based activities and practices that heighten risk of oral contraction of cholera³.

A secondary objective is to assess Oxfam's cholera response in light of the results of the gender and cholera vulnerability analysis, and to accordingly provide recommendations to improve the implementation of future emergency responses to cholera outbreaks in Sierra Leone.

GENDER AND VULNERABILITY TO CHOLERA

Gender roles are socially constructed categories that are assigned by society according to sex and age. Children are socialized from a tender age into socially-defined categories of male or female which circumscribe how they should behave, appear, and even feel. The rigidity and content of these categories is defined by society.

This gender analysis applies the Harvard Framework to reveal what these roles are in a given context: reproductive activities falling within the realm of the household and its upkeep, productive activities that generate income, and activities and practices that are community based or that serve the community. It also examines the underlying dynamics of control that can create barriers to accessing those resources which enable individuals to prevent the contraction of cholera. The framework, however, is static and does not reveal interconnections between the realms of home, place of work, and community. It is therefore important to be mindful of the dynamics linking these spaces. For instance, women may have to carry their reproductive duties with them to work, affecting their risk of exposure to the disease.

Vulnerability to cholera is affected by:

- the environment, as seasonal droughts and flooding can affect access to clean water and can create the necessary conditions for the disease to thrive;
- access to safe water;
- exposure to the disease, heightened by poor hygiene and sanitation conditions;
- awareness of the disease, including an understanding of what causes cholera and how it is spread, and measures for prevention, identification, and treatment;
- personal hygiene and food preparation practices.⁴

Applying a gender lens, we can consider how environmental, economic, and socio-cultural factors in a specific context shape gender roles and relations. In turn, it is possible to analyse how those roles and the power status accorded by virtue of gender and age can affect an individual's access to safe water, soap, and treatment; exposure to unhygienic conditions; and awareness of the causes and prevention of cholera, in addition to any gender-specific practices that could enhance vulnerability to infection.

METHODOLOGY

The methodology followed is based on the research protocol developed by the Lead Consultant and approved by Oxfam at the outset of the assignment.

Primary research for this report was carried out in Oxfam's operational areas for the emergency response, rather than in the epicentres of the epidemic. Selection criteria included sites that were 'hot spots' in the outbreak and sites that were considered to display unique contexts of cholera transmission.

Data collection was undertaken using qualitative research methods. A combination of visual participatory learning and action tools, including community mapping, livelihood analysis, seasonal calendars, transect walks, household portraits, natural interviewing, and group discussion techniques were drawn upon to suit the research setting, including the level of interest and availability of community members.

Line-listing data from the national database of the Directorate for Disease Prevention and Control (DDPC) of the Ministry of Health and Sanitation (MOHS) was consulted to discern large scale gender patterns in the outbreak. In rural areas, this data was cross-checked with diarrhoea and vomiting cases recorded in the Under-5 and Adult General Registers of each Peripheral Health Unit (PHU). If no data were available, the team would endeavour to obtain data from Oxfam-established Oral Rehydration Treatment points (ORP). This process of cross-checking data was not followed in Freetown due to the volume of the caseload, significantly higher reporting rates, and because in the urban context where people are highly mobile we could not assume that all patients seeking treatment would go to their local PHU.

A research team was formed by the Lead Consultant, who had extensive life and work experience in Sierra Leone. Three research team members with complementary skills and backgrounds in gender, WASH, and the cholera response (although not with Oxfam) were recruited. Team members were briefed on the research protocol and trained in the use of the research techniques. In the field, researchers worked in groups, pairs, and independently, to collect information. Each day was followed by a summary discussion, and each segment of the research followed by a formative analysis, before carrying out a cumulative analysis that generated the main findings.

The core research team were supported by appointed Oxfam Project Assistants in each location, who were known to local communities. Upon entering a community, the team would meet with traditional authorities and explain our research task before meeting with cholera response volunteers and other members of the community. In the urban sites, the team would first meet with the Chairs of relevant WASH Committees and volunteers.

In the rural Districts, the research process involved making initial contact with PHUs and holding discussions with health care staff to learn about the origin and scale of the outbreak. The team would start by visiting the relevant PHU for the designated village, which in most cases was based in another village. On one occasion, the team learnt from a PHU of a specific source of outbreak in a nearby village and diverged from its schedule to investigate.

In addition, key informant interviews were held with Oxfam Programme Managers and Team Leaders, and MOHS officials in Freetown and Koinadugu District, and with UNICEF in Freetown. Attempts to meet with the District Management Health Team (DHMT), District Medical Officer (DMO), and District Surveillance Officer (DSO) in Koinadugu District were unsuccessful. It was not possible to meet officials in Magburaka because the Oxfam base is situated in Mile 91 which is two hours' drive away and because attempts to coordinate the cholera response via the DHMT had not been successful.

Data was collected from the sites listed in Table 1, over a period of 13 days.

Table 1 Visited areas, with key informants

District	Chiefdom	Village	Key informant(s)
<i>Tonkolili District</i>	Malal Mara Chiefdom	Makoba Bana	PHU, BFV, community
		Masugbay 1	BFV, community
	Yoni Chiefdom	Rokimbie 1 &2	PHU, BFV, community
<i>Koinadugu District</i>	Kasunko Chiefdom	Fadugu	PHU, WASH Committee/BFV, <i>luma</i> market, school, community
		Sansugbay	BFVs, community
		Sawuria	PHU
		Kakoya	BFV, community
	Diang Chiefdom	Badala	PHU, BFV, community, school
		Yarra	PHU (nurse not available)
		Segbeya	Community (BFV not available)
<i>Freetown and Western Area</i>		Kroo Bay	PHU, BFV, community
		Kissy Mental Hospital	PHU (nurse not available), BFV, community, school, psychiatric hospital

The research team encountered a number of constraints in the data collection process. Two days from the original schedule were lost due to travel restrictions during the announcement of national election results. Bad and impassable roads were a problem in Koinadugu District, meaning that the team often had less than a day in each location to meet security regulations, and in one case, less than three hours. Gridlocked traffic in Freetown posed similar problems for the research team when commuting from both extremities of the city, meaning the team had to frequently leave research sites earlier than ideal. As a result of time and security constraints, the team often had a limited window of time to meet with communities, after working men and women had left their households to work in the fields, mines, wharf, market, and streets. Any opportunity that arose to observe and informally interview individuals involved in day-to-day activities was seized by the team.

2 GENDERED PATTERNS OF THE OUTBREAK

Comment on the national cholera database

The national cholera database was maintained by the DDPC in the MOHS and is populated by data called in from DHMTs, derived from PHUs across the country. Public health units should send updates on a case-by-case basis and include data on age and sex.

There are a number of challenges in sending updates from the PHU level. To illustrate, the reporting rate for Week 48 was 80 per cent in Freetown, 49 per cent in Tonkolili District, and 72 per cent in Koinadugu District. Data from private health centres is not taken into account. Poor network coverage in rural areas meant that in some cases, it was necessary to walk over a mile to send a message, which is made more difficult when there are patients to attend to. Community health officers, nurses, and maternal and child health aides heading the PHUs did not receive additional phone credit to cover the costs of cholera-related reporting, but were expected to draw upon their monthly allocation. Although this was not said to be a problem, it could potentially have been a barrier to communicating if credit is used up before the end of the month. Data is not computerized and all cases are hand-written into the Under-5 and Adult General Registers. Cases logged in the register are classified as 'D&V' rather than 'cholera', which can skew the data on incidence. Finally, cases of cholera deaths within communities outside of PHU areas are invisible in the national data because they are not recorded in the PHU registers.

Knowing these data reporting challenges, the research team cross-checked the data in the Under 5 and Adult General Registers⁵ with that of the national line listing database. Based on a comparison with the DDPC line listing data, several observations on the accuracy of the database have been made, such as that:

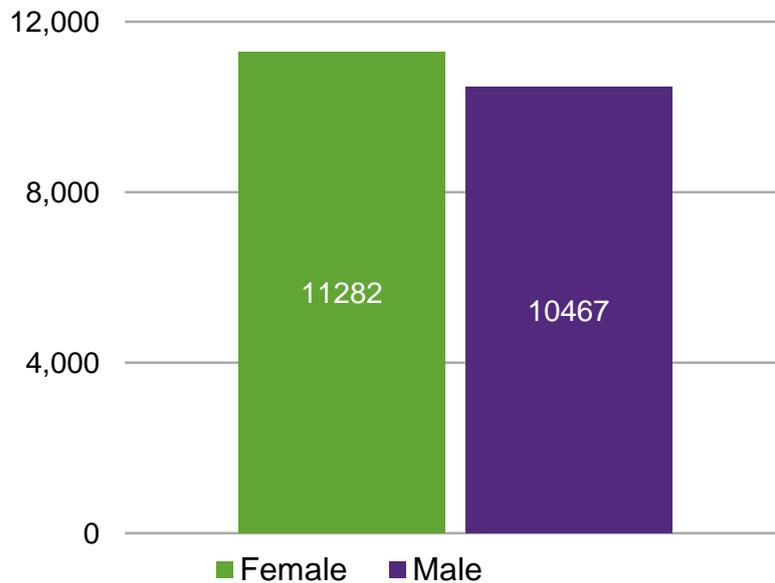
- adult D&V cases in Koinadugu District are under-reported, for example:
 - Fadugu village counted four cases (of which three were female) in the national database, while the research team counted 19 (of which 13 were female);
 - Sawuria village counted no cases in the national database, while the research team counted six (of which three were female).
- Under-5 cases of D&V are included in the database for some Districts, but are not included in the national database for Tonkolili District or Koinadugu District, despite a spike in cases in these areas around the period of the outbreak that dwarfed the number of adult cases. Under-reporting is much greater if this is considered;
- the official number of death cases is not reliable:
 - Tonkolili District's deaths data (32) do not include seven deaths in Masugbay village wards 1 and 2; of which four were in the same household.⁶
- Many data entry inconsistencies exist in the national database (e.g. in age categories):
 - specific age data is incomplete for most Districts (e.g. blank age entries).

It was not possible to ascertain whether reluctance to disclose the reach and scale of the cholera outbreak played a part in under-reporting of cases. However, in almost all cases, health care staff concurred that while D&V is a seasonal occurrence, particularly among children under five years old, cases in 2012 were worse and often were the result of cholera. There are no laboratory testing facilities in Sierra Leone and most PHUs did not have easy access to rapid testing facilities (provided by the DSO), which is likely to have affected their diagnosis and decision to report cases.

Was the cholera outbreak gendered?

At the aggregate national level, there are slightly more female (52 per cent) than male cases (48 per cent). However, given that women make up 51 per cent of Sierra Leone's population, the apparent difference in vulnerability is only slight⁷.

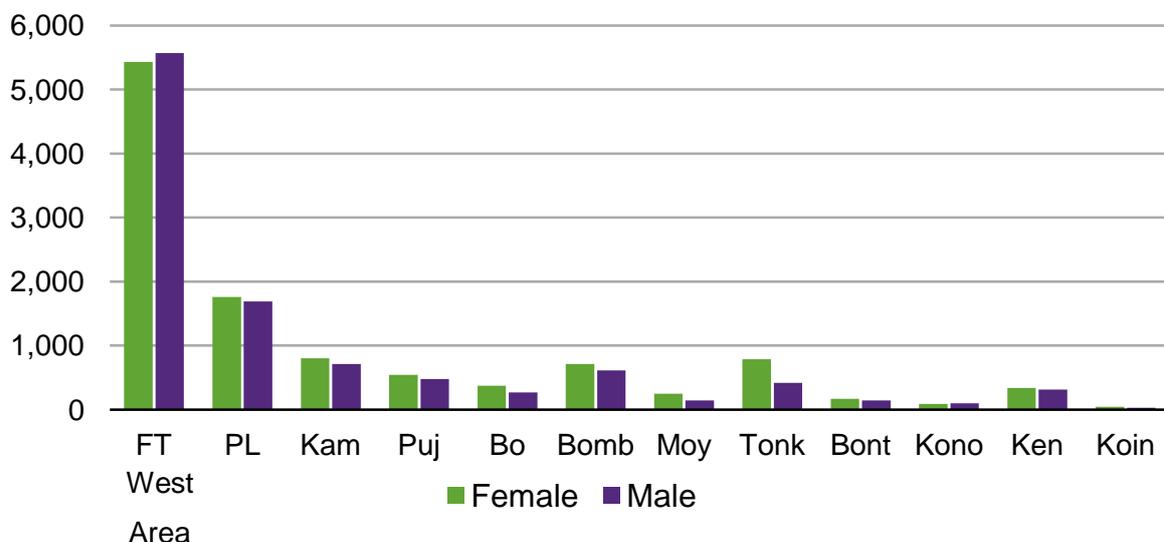
Figure 1. Total cholera cases over the age of 5, by sex (weeks 2–40)



Source: Directorate of Disease Prevention and Control, Ministry of Health and Sanitation (MoHS), Sierra Leone, 2012

A regional breakdown of cholera cases reveals a more complex relationship between gender and livelihood zones and the vulnerability to cholera. What becomes apparent is that the disease burden is slightly and consistently more skewed towards female cases in districts with agricultural economies. This trend was not the case in the Western Area (with the vast majority of cases) and Kono District, both of which have very different economic bases from the rest of the country. The higher ratio of disease burden in males in Kono District might be explained by its economic base of diamond mining which is dominated by men, attracting labourers from the surrounding Districts.

Figure 2. Cholera cases over the age of five, by district and sex (weeks 2–40)

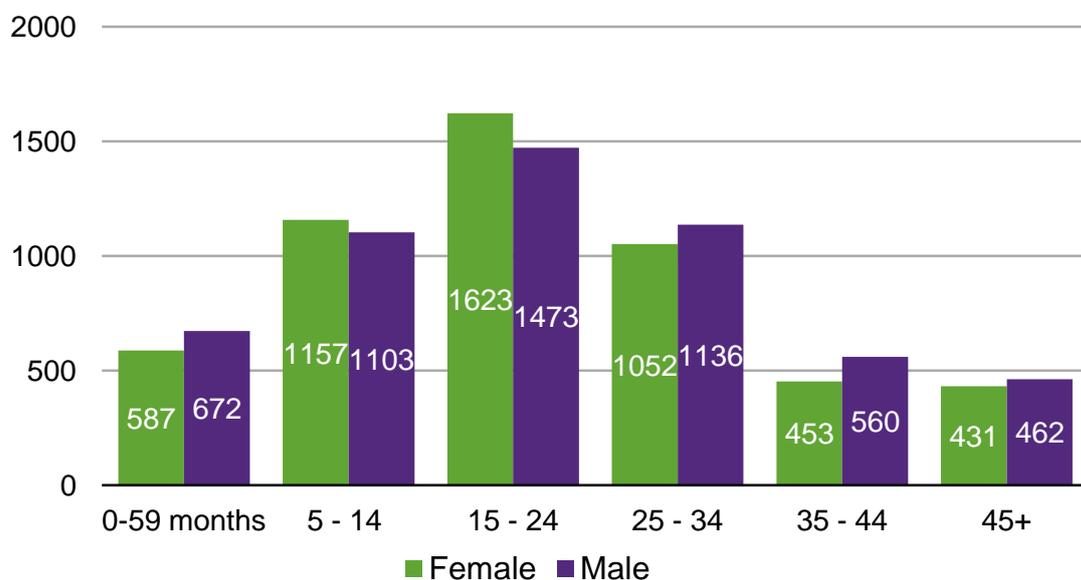


Source: Directorate of Disease Prevention and Control, Ministry of Health and Sanitation (MoHS), Sierra Leone, 2012

Due to a lack of age data for most cases outside the Western Area (including Freetown), it is only possible to analyse the relationship between age and sex categories for this division of Sierra Leone, and not for the national level or for other specific districts of interest. Furthermore, it should be noted that the extent to which it is possible to comment in detail on the gender and occupational profile of the highest cases is limited by the fact that the team did not visit the epicentres of the outbreak in Freetown. It is therefore only possible to present hypothetical explanations for the distribution of cases in the Western Area (see **Figure 3**):

- a higher proportion of under-five cases are male;
- a higher proportion of female cases through childhood and into early adulthood, from ages five to 24;
- the age range 15 to 24 has the highest incidence of cases and these are predominantly female. above the age of 24, there are more male cases.

Figure 3. Cholera cases in Western Area by age and sex (weeks 2–40)



In the urban context of Freetown, this pattern could be explained by understanding the youth demographics, as well as the most likely sources of vulnerability amongst each category.

The disproportionate number of male cases in children under the age of five was also observed in the PHU registers of Tonkolili District and Koinadugu District; the pattern may be widespread. This higher burden on young males may result from a lower standard of care from mothers to their sons, in comparison to their daughters, due to the socialization of boys into a masculine identity.

The higher incidence of disease among girls and young women aged five to 24 may partly reflect their relative size within the overall population, but may also reflect aspects of vulnerability that relate to gender roles and health status⁷, such as care taking of babies and small children and reduced immunity during pregnancy. Girls are often groomed from a young age to take care of babies and young children; if the infant is infected with cholera then the young girls who clean and feed the child are likely to contract the disease themselves. While early childbearing is prevalent across Sierra Leone, in Freetown the use of family planning increases with age⁸ and reduces the proportion of older women bearing children (and thus reducing the risk of exposure). Due to the prevalence of early

marriages and childbearing, the low use of family planning, and prevalent transactional sexual relationships, 32 per cent of women aged 15 to 19 in Sierra Leone have had a live birth or are currently pregnant, and 38 per cent of women aged 20 to 24 have had a live birth before the age of 18.⁹

It is also important to consider the particular vulnerability of single mothers who often lack adequate support of social networks and who must struggle to meet their needs and those of their baby in an urban cash economy. Women, who cannot afford child-care, and whose boyfriends or families may not have the means or will to support them, face the challenge of generating income while looking after infants and babies, often while on the move.

From the age of 25 and over in the Western Area, male cases were slightly and consistently more prevalent. The source of their relative vulnerability is likely to be explained by their exposure to the disease whilst convening and eating in crowded areas which often lack basic sanitation; this exposure is a result of their typical gender roles. Men above this age in the urban setting are less likely to spend time in the household, typically leaving in the morning to go to, or look for work. People in Freetown tend to eat more food prepared by local vendors than in rural areas, in most instances for convenience, and because of financial imperatives for lower-income groups. This practice is likely to be more prevalent amongst men, particularly those who are unmarried from lower-income households who have no one to cook for them at home. Eating street food also appears to be more prevalent in slums.

Further in-depth quantitative analysis, with a particular focus on gender and vulnerability to cholera, is recommended to develop these hypotheses and inform future planning.

3 CONTEXTS OF RESEARCH

The spread of the outbreak

As with previous outbreaks of cholera, the 2012 epidemic originated in a coastal fishing village in Kambia District. The first laboratory confirmed case in Kambia District was registered, and the outbreak declared, on 17 February 2012 (Week 1). In Week 9 a second outbreak occurred in Pujehun District at the other end of Sierra Leone's coast, possibly resulting from a second, unrelated source of infection (cholera reservoir or person-to-person).

The pattern of the outbreak and spread suggests that person-to-person transmission was key to the rapid spread of the disease. Cholera reached Freetown in the Mabella slum on 23 June¹⁰ (Week 25) with the first laboratory confirmed case on 16 July. By Week 29, it had spread to Oxfam's operational areas of Kroo Bay and Kissy hillside.

By mid-July (Week 28), the outbreak was rising exponentially, and had spread to 12 of the 14 Districts in the country between Weeks 31 and 35, including Tonkolili District in early August (Week 31) and Koinadugu District in late August (Week 34).

Non-government organization response began to mobilize in late July to early August. An emergency was declared by President Ernest Bai Koroma on 17 August 2012.

Profile of the research sites

Kroo Bay, Freetown

Kroo Bay is a large, densely populated, waterside slum in Freetown, built upon low-lying, reclaimed land; the area is highly prone to severe seasonal flooding, aggravated by poor/non-existent drainage. Waste is disposed of in, or on the banks of, the river, the gutter and along the shoreline. Two functional communal pit latrines serve a large segment of the community by the lower waterside, one of which is controlled by a Chief and requires payment (Le 200). Open defecation is commonly practiced on the waterside areas, where nappies are disposed and bucket latrines emptied. Pigs forage through the mud, rubbish banks, and the football field, intermixing freely with humans; as a result there is a high prevalence of flies. Due to a high water table and damaged pipes, unprotected water sources (taps and wells) cause to cross-contamination of pipe-borne water – a source of drinking water for segments of the community who cannot afford to purchase bagged drinking water in the dry season.

Once a small fishing settlement, the population of Kroo Bay developed during the colonial ship building era and grew rapidly after the civil war (1991-2001) which caused high levels of migration to the capital. It is commonplace for those who have lived there for many years to have well-established social networks, and for 'strangers' – the more recent arrivals – to experience greater social exclusion, particularly in relation to development programmes. Most live a 'hand-to-mouth' existence and there are many children out of school and living without the care of a guardian. The inhabitants of Kroo Bay live a competitive existence and have to fend for themselves. Community members perceive a lower level of formal social integration in terms of active CBOs, but a higher level of informal social support from friends and neighbours. Dominant livelihoods include trading, particularly in scrap parts, mobile petty trade, and street food vending, as well as petty crime, selling drug, gambling, and sex work. There is a greater tendency to eat food cooked by street vendors than home cooked food.

Kissy, Freetown

The Kissy neighbourhood in Freetown is a large, widespread hillside community. There is no pipe-borne water, but a prevalence of streams. There are several wells uphill, which do not dry, but experience severe water shortages. Wells are unprotected and their use comes with fees (Le 2,000 per week/Le 100 per bucket), except during the rainy season. Men are caretakers of the wells. There is a large rubbish tip which spontaneously combusts in the heat and fills the air with acrid smoke; it is perched above and surrounding a stream and a tap used by a large part of the community, including schools and the psychiatric hospital (occasional use). Collecting water is arduous on the hillside. There are no toilet facilities on the upper hillside and open defecation is practiced which flows downstream, contaminating domestic water supplies.

Socially, the lower hillside is older and more established. The upper hillside, is mostly populated by the so-called 'native people' who have arrived relatively recently from the provinces and tend to have lower education and social capital. Women and children predominantly engage in petty trade at Kissy market, as well as through 'nomadic shops'. Many men find casual wage labour at the Water Quay by Cline Town. There is a high level of socio-economic differentiation, including a large proportion of underemployed and economically inactive individuals, living alongside higher status civil servants and high-income business people. There are more than 10 primary schools in the area, some of which were targeted for cholera awareness raising, which focussed mainly on government schools. There are many children who do not attend school, including '*men-pikin*'¹¹, who often work as domestic child labourers for relatives, or may be involved in petty trade, such as cutting and selling wood on the hillside.

Kissy Mental Hospital is Sierra Leone's only psychiatric hospital, which hosts a population of predominantly male, mentally ill patients. There is a high level of stigmatization of the mentally ill in the host community and in general in the country. The hospital was completely disconnected from the cholera response, both through MOHS and in the local community response. Extremely poor sanitation and water access, the use of physical restraints and dependency of patients, and routine escape of some patients, create highly susceptible conditions for cholera transmission.

Tonkolili District

Tonkolili District is centrally located in Sierra Leone, provides a main East-West route, and borders seven other Districts. The economic base includes large-scale industrial mining of iron ore and bauxite, the hydroelectric Bumbuna dam in the north, and biofuel cash crops. Commercial activity takes place along the main highways, centring in Mile 91 and the administrative headquarter city of Magburaka. Communities visited in Malal Mara and Yoni Chiefdoms engage primarily in subsistence agriculture, animal husbandry, and hunting, with some income generation around petty trade (local and Freetown trade and in *luma* markets), small business, transport, and skilled trades. Some men work for Addax Bioenergy.

Communities off the highway and further in the interior of the District are particularly affected by extreme water scarcity in the dry season, when swamp water is used to meet essential drinking and cooking needs. Water harvesting in the dry season is highly time consuming for women and children, who must walk long distances and take turns at the mouth of small gravities to scoop out small amounts of water, taking care not to disturb the muddy sediment. Conflict frequently erupts at this time in the swamps. Conflict over water also puts pressure on families. Water scarcity affects hygiene habits, frequency and extent of bathing, and the laundering of clothes. Illnesses and symptoms including dysentery, diarrhoea, and heat rash become common. Many women have explained that they are rejected by their husbands at this time of year because of their rough bodies, in favour of younger women.

Hand-dug wells are not deep enough to breach the bedrock and provide water throughout the dry seasons, with the exception of a deep and reliable well near the property of the Chief in Rokimbie, which supplies water year-round to nearby Mile 91 residents. There are a very limited number of shared toilets and so open defecation is widespread, especially while on the farm.

Koinadugu District

Koinadugu District is lush and hilly with a prevalence of ravines, rain-fed streams, gravities, rapids, and rivers. In addition to mining, the economic base is also agricultural and includes cash crop and rice farming, and small-scale vegetable production and sale. The District shares a long international border with Guinea, and internal borders with Bombali, Tonkalili, and Kono Districts. Women and children, as well as men from more isolated communities, congregate during weekly *luma* markets at designated commercial centres, including Fadugu in Kasunko Chiefdom, and Badala in Diang Chiefdom. The communities visited by the research team in Kasonko Chiefdom engage in primarily in subsistence agriculture with some-scale small animal husbandry. Gold mining drives economic activity in Diang Chiefdom, as well as logging and some subsistence agriculture. The District is extremely poor and at times the road into Diang is impassable, particularly during the rainy season.

Water for domestic use is frequently provided by streams, which are preferred for laundering, bathing, and cooking. In Makoba Bana, Kasunko Chiefdom, women launder, children collect water, and vehicles drive through the same stream which meets the drinking water needs of residents in the dry season. In Diang Chiefdom, residents of Badala access the mighty Rokel River for hygiene and domestic use, partitioning the upstream for female bathing and defecation and the downstream for male usage. There is a very limited use of latrines and frequent practice of open defecation in all areas. In the interior of Kasunko Chiefdom, near Kakoya, and Diang, near Badala, there is an additional problem of unsafe and collapsing NGO-commissioned, contractor-built VIP latrines, locally called 'death trap toilets'. There is contamination of drinking water due to open defecation and seasonal flooding. In Fadugu, piped water is contaminated at the source by an unprotected dam in a forested area but considered by residents to be clean. Attempts by the WASH Committee in Fadugu to raise money to clean the well were halted by corruption and the trust of the community was damaged.

Segbeya in Diang Chiefdom has unique conditions; a semi-permanent mud and stick settlement has gathered around the vacant site of Taia Lion Resources, a Canadian registered gold exploration company with a project in Lake Sonfon. Community members engage in artisanal gold mining. Those mining near the settlement are predominantly women and children, with some elderly men and young men in the pit. Some members have become permanent residents who mine throughout the year, others are seasonal and holiday workers. Women can work in this area, near the settlement, while staying at a close distance to their children. There is no school, and the nearest PHU is approximately 7 km away, meaning the first recourse in health seeking is frequently traditional medicine. Water is accessed from a stream which flows into the mining area and is segmented for use, starting with drinking water upstream (which is frequently scooped directly into the mouth while standing in the water), followed by washing and bathing, then child defecation and the washing of nappies, and finally by washing gold at the deeper, downstream end. The walls of the single well which was drilled by the mining company are cracked and allow permeation of surrounding stream and mining water. The well is submerged by the larger body of water until the dry season.

The high altitude scrub vegetation and rocky terrain makes digging wells and latrines impossible. There is cattle rearing on the highland. Gold digging takes place on the edges of Lake Sonfon, a shallow lake ringed by the Sula Mountains, which becomes mainly swamp after the dry season. The proposed national park hosts an extremely diverse ecosystem of birds and reptiles, including crocodiles and boa constrictors. Residents of Segbeya are fearful of the lake and the spirits that they believe inhabit it. Women and children wade through muddy waters of the gold mining area which harbour crocodiles that have been known to snatch small livestock and dogs.

4 GENDERED DIMENSIONS OF CHOLERA VULNERABILITY

VULNERABLE GENDER ROLES, ACTIVITIES, AND PRACTICES

While a number of general findings apply to Sierra Leone as a whole and are indicated as such, some gender roles and relations cannot be generalized at the national level, but apply to specific environmental, economic, and socio-cultural contexts. The following findings for one context may relate to other similar contexts.

Cholera exposure in the domestic realm

Gender role socialization in the domestic realm

In Sierra Leone, the reproductive roles of the domestic sphere are assigned exclusively to women and children. This cuts across urban and rural settings and ethnicities. Girls and boys are both socialized into domestic tasks from the time they are first able to pick up a broom, carry items on their head, and beat rice in a standing pestle and mortar or *mataodo*.

However, even before reaching puberty, the social trajectories of boys and girls begin to diverge dramatically, reinforcing social norms of masculine and feminine identities. Mothers play an influential role in initiating and reinforcing this divergence with overt and unconscious signals. Mothers are typically the ones to begin pulling boys away from tasks considered to be 'feminine,' such as washing pots and pans and laundering clothes. Mothers and female caretakers who require the assistance of boys will tend to cajole, rather than demand and reprimand, as is the case with girls, and only for those tasks that are considered socially acceptable for them to carry out, such as chopping wood and ironing clothes.

Communities also play a key role in the formal socialization process of children, through male and female-only secret societies that vary based on ethnicity (e.g. *Bondo* or *Sande* for women, *Poro* and *Wunde* for men). In these societies, children are taken into ceremonious and prolonged isolation in the bush where they are schooled by their elders in the traditions and beliefs of the community, healing arts, cultivation of feminine and masculine identities, maintenance of local power structures, and practical lessons befitting their gender. Learning takes place through physical and mental tests, including female genital mutilation/cutting. Among the lessons learned by girls are techniques for managing the household, including managing relationships with polygamous mates. Initiated members are sworn to secrecy and social norms are upheld by threats of death and witchcraft for those who reveal the secrets of the bush. This is predominantly the practice in rural Sierra Leone, though there is an established urban tradition of sending children to the bush for initiation during school holidays. Exceptions include ethnic Krios and Christians, and the practice of initiation also falls when the mother is better educated¹².

In the rural setting, female relatives will assume additional workloads for the boys, including washing their clothes – duties that revert to the future wife of the boy after marriage. This same pattern obtains in urban settings, with some variation. Marriage in the urban cash economy is more difficult for many young men; until the time when they become economically self-sufficient and able to provide for dependents, most young, unmarried (and often unemployed/underemployed) men (or *palampos* as

they are known in Krio), will continue to launder their own clothes and fetch water, and even cook for themselves with other young men, until the time when they are married or living with a partner.

Domestic roles and exposure to cholera

On a daily basis, the domestic realm presents multiple transmission routes that enhance the vulnerability of household members to cholera contamination. Some of these affect all members equally, such as sharing untreated water from the same cup or drinking bucket, whilst others are likely to expose certain members of the household on account of their role.

Girls and women are on the frontline of water, food, and hygiene issues for the family, placing them at a higher risk of exposure to cholera, but also giving them greater influence over cholera prevention and treatment within the household. The caregiving role covers a range of tasks susceptible to contracting and transmitting cholera, including preparing and cooking food; feeding, nursing, and washing babies and young children; and changing nappies and emptying potties.

Cooking and feeding activities typically involve tasting food - this is often done by applying sauce to the back of the hand and then licking it. Mothers who feed their babies with a spoon frequently test the food before and while feeding their babies. In Kroo Bay, the team observed a well-informed young mother test and feed to her infant day-old rice porridge (*pap*) that had been left uncovered in her house. Contact with infant faeces is inevitable, and is rarely followed by proper hand washing. In Rokimbie, a woman in a focus group explained that mothers often sit with an unclothed baby in their laps whilst preparing food on the ground, and sometimes the baby will urinate or pass faeces, which can come into contact with the food; in such instances, the women agreed that they discard only a portion of the food, rather than take the time and resources to start the meal over, particularly as infant faeces is generally regarded to be harmless.

A girl whose mother or female caregiver requires assistance in taking care of babies is given the responsibility of caregiving as soon as she is physically capable of carrying a baby on her back; this responsibility is never given to boys, of any age. This increases exposure to cholera due to the inevitable contact of caregivers with babies' faeces. The research team observed this particular practice with higher frequency in Segbeya mining area, where a number of small girls in the community were designated by their families to carry and look after toddlers so that mothers could be free to labour in the mining streams.

Children under the age of five are highly prone to diarrhoea and vomiting, and are at higher risk of contracting cholera for a number of reasons. Nursing children can be exposed if a mother's contaminated hands have previously wiped her breast before feeding, or by being left on the ground, where they frequently pick objects and put them into their mouths. They come into contact with many individuals, including older children, who handle them closely, and may even come into contact with animals and fowl that may carry infection.

The high incidence of cholera in children under the age of five could explain the higher prevalence of cholera in females of caregiving ages than of males in the same age groups, through transmission from child to caregiver.

Box 1. Are male babies more vulnerable?

Under-five D&V data was not consistently captured in the national database, however the research team recorded this data upcountry from several PHUs. In Tonkolili District, cases of D&V in children under the age of five far outnumbered adult cases. This report suggests (but without certainty) that caretaking practices and beliefs which socialize babies into gender roles may explain the apparent higher vulnerability of male babies.

There is generally a greater concern for preserving the modesty of baby girls in Sierra Leone. Baby boys can frequently be seen running naked in any setting, but not so with girls, who are fully covered. With their bare bodies in contact with the ground and dirt, baby boys could be at greater risk of body to hand to mouth contamination than if they were wearing clothes. In times of water shortages, sparse or reduced frequency of bathing might also enhance their vulnerability.

A nurse in Badala denied any difference in the treatment of male and female babies during a discussion with the research team, but later explained that many women in the area believe that boys who nurse for too long can 'fool' or become fools. As a result they tend to be weaned earlier than girls, which could affect their physical development and resistance to disease, as well as increasing the exposure risk associated with milk formula that could be mixed with contaminated water. This belief and associated practice is likely to be context-specific, as the team found that it did not uphold in Kroo Bay, where young women had learned that breastfeeding is beneficial to the child.

Gender-specific eating practices

Gender-specific eating practices within the household also affect the risk of cholera transmission. It is common for women in rural areas to eat in groups, with their polygamous mates, and with neighbouring women. They often pool resources, share food, and eat from the same bowl. Women in this context prefer to use their hands to eat, which they explain allows them to grasp more food. The same applies for children, where group eating often leads to competition and preference for eating with hands. In contrast, married men who are out during the day tend to return to prepared evening meals that have their own container and cover and this meal is eaten with a spoon. There also appears to be a status association with the use of spoon, as it implies that the person does not have to compete for food. Many households will have only one spoon which is used by the man. As one woman explained, 'a man without a spoon will not eat'. This practice would seem to affect the differential vulnerability of women and men to cholera, as spoons, unlike hands, never come into contact with faeces. The same preferences seem to apply to some extent in Kissy, where young girls explained that while they had learned to use spoons at school, they preferred to eat with their hands. Women in the urban Freetown setting generally do not practice group eating that is common in rural areas, however they still appear to prefer the use of hands for eating the food they cook. The practice of eating changes in urban, lower-income households, as household members tend to eat more from the street, as examined in the next section.

Poor or irregular hand washing practices places women and children engaged in these activities at higher risk of contamination.

Access to safe drinking water

Access to clean water may affect different members of the household in different ways. The role of fetching water, for instance, may place women and children at greater risk of early contamination, by drinking water directly from the source before filling buckets to carry. Polygamous households introduce specific dynamics that can enhance the vulnerability of women and children, while reducing the vulnerability of men within the household. For instance, the research team observed post-distribution that while male household heads were assured access to safe drinking water, polygamous

wives and their children do not enjoy equitable access. Although mates may cook from the same pot and eat from the same bowl, their interaction is frequently characterized by competition. The partners of a polygamous man do not share drinking buckets and water with each other as they claim their ownership. In some complexly structured households, the drinking bucket may be located in the parlour where all can access it, in which case conflict arises over responsibility for cleaning, filling, and treatment of the water.

Caring for the sick is a domestic activity that falls primarily to women and children, especially girls. In the midst of a cholera outbreak, it can expose these groups to heightened risk of infection. Duties of caring for the sick person include bringing food, laundering clothes and bedding, cleaning vomit, and emptying the stool container. If a man is sick, normally his wife will take on the burden of caring. If a woman is sick, her husband may care for her initially, but in most cases, female friends or relatives, including young girls, will play this role. Boys below a certain age may also support the care of a sick person, especially of an older relative to whom they may have a strong bond and obligation to assist, than adults who are less motivated to help with the prolonged healing of the elderly (see Box 2). Frequently when a person is sick, neighbouring women will also come to visit them and offer help.

Pregnant women may experience a specific kind of vulnerability to cholera infection. In addition to their naturally reduced immunity, the type of cravings and eating habits they practice can put them at higher risk of eating contaminated foods. Particularly in Freetown and urban centres with street food, pregnant women can satisfy cravings for diverse and sour flavours, including such things as *grund soup*, which is a mix of raw cucumbers, smoked fish, lime, and tomatoes. Frequent grazing also means eating at unusual times, including at night, and eating foods that should be discarded.

Box 2. Seven unrecorded deaths in Masugbay Village

In total, seven people died here in Masugbay (six in Masugbay 1 and one in neighbouring Masugbay 2). None of these deaths appear in the national database.

The outbreak in Masugbay started with an older man who was a blacksmith, hunter, farmer, and the head of his household. He had been sick for some time, so when the symptoms hit, it wasn't taken seriously and he was neglected. He was cared for by his teenage granddaughter, and to a lesser extent, by his two grandsons. When he died, normal funeral rites ensued, with sympathizers calling from the village to mourn. Within days, however, the granddaughter and two grandsons also died. Another granddaughter got sick before the DHMT was contacted and measures taken to contain the outbreak. By then, three people in other households had also died.

Noticing that those who visited the houses of the sick also became unwell and sometimes died, community members believed the sickness was a curse. They forbade their children to visit the sick, and did not mourn loudly. With the support of the DHMT, and later Concern and Oxfam, there has been a great increase in the understanding of cholera, and appreciation of the measures needed to prevent it.

The 'Old Pa' who died first had been sick and had not travelled outside the village for some time. Locals believe he became sick from the water, though it is also possible that he contracted it through a carrier.

Cholera exposure through productive activities

Risky urban livelihoods

As within the domestic realm, the income generating activities of men, women, girls, and boys are gender specific. As a result, their exposure to cholera varies accordingly with the nature of livelihood and coping strategies.

Livelihood strategies in the area around the Kroo Bay slum generate higher risks of exposure to cholera due to the filth in the environment. Perhaps at greatest risk are young boys, especially those not attending school, living without adequate care, or who are orphans, as they are expected to manage themselves, find money, help provide for their families, and look after their own basic needs without assistance. They are normally underfed and lack access to clean drinking water. Most scavenge through rubbish for valuable items ('black mining'), such as tin cans, glass bottles, and wires, often depending on this activity to pay for their next meal.

Sex work is an income generating strategy and coping mechanism for young women (who become derogatorily known as 'ray ray girls') from the onset of puberty. Close bodily contact with a carrier carries a high risk of infection. Young women in Kroo Bay described their daily routine which involved sleeping in the daytime and waking in the evening hours before going out to walk the streets after dark. There is a distinction to be made between professional commercial sex workers who have a regular routine, and 'taxis'¹³, who are available for hire at any hour. Many of these girls and women are poorly nourished, invest what they can in their appearance (including clothes, weave-ons, and false eyelashes), and otherwise live a hand-to-mouth existence. Girls in Kroo Bay described informal mutual support among women in their circle, including a pregnant woman who supplied their water in return for their assistance and support. They described assisting a young woman who had contracted cholera by taking her to the clinic.

In and around the brackish waters and rubbish-covered beaches of the slum are other high risk livelihoods. Many boys and young men will dive from boats into the sea to scoop up buckets of sand which can be sold to make cement and masonry products.

Fishing on the coast and in boats is done by men and boys. On the shore, they wade into the water to catch incoming shoals of small fish; some carrying well worn nets in their teeth. At sea, men and boys carry food and drinking water in 1.5 l bottles or large gallon rubbers. Drinking water is often shared and hands are not washed after handling fish and before eating. On the shore, children assist fishermen to pick out the fish from the nets. A fisherman told the research team of how his pubescent niece followed him down the coastline, carrying the bowl of fish on her head; he became violently ill with cholera at night after eating *fry fry* from a street vendor.

While men haul in the catch, women and girls purchase, process, and sell the fish in markets and on the street. Fish can be processed through smoking – sometimes multiple times to preserve older fish – or can be left raw. Larger fish may be cut into segments and cleaned out. Uncovered fish in markets can spread contamination even before reaching the dinner table. Much of the fish consumed upcountry around urban centres originates from Freetown. It is beyond the scope of this research to comment on the supply chain for fish between Freetown and final upcountry destinations, but this is a potential transmission route that should be considered. Inadequate cold storage while travelling and in towns outside Freetown other than headquarter towns mean that contaminated fish could transmit disease long distances, placing the women and girls handling the fish, as well as those purchasing it, at great risk.

In urban Freetown, toilet attendants who clean latrines and collect a portion of user fees are exclusively male. Dislodging of latrines is a separate and highly stigmatized and risky job. In Kroo Bay, the research team was not able to access any young men undertaking this job as they could not be identified, likely because of their shame in making their occupation known to the public. However, the team learned that dislodging is a one-off contract job that pays well. It is performed at night by men and requires a flowing supply of rum to cope with the stench. Men form a line from the pit to the repository where sewage is emptied and toss buckets back and forth. Attendants stand by with soap, rum, and kerosene, which workers rub onto their bodies to reduce contamination of germs.

Among skilled workers, plumbers may come into contact with cholera through their work repairing pipes and being exposed to unclean and stagnant water; cobblers must handle people's shoes which may be dirty and have traces of contamination; and masons use water when making bricks which may also be contaminated.

Generally, men spend more time on the streets looking for casual labour contracts than at home. In Kissy, many commute to the Water Quay in Cline Town, where they look daily for paid jobs. In the meantime, they are more likely to eat uncovered and contaminated food and drink untreated water.

Women work predominantly in petty trade, both mobile and in markets, predominantly selling food and food-related products. Failing to cover food items, handling food items that are eaten directly rather than cooked and boiled, and handling drinking water bags can spread disease to customers or to traders themselves while they eat their own food. In addition, women who have babies may have to carry them whilst they work and must frequently stop to change their nappies, often returning to work without washing their hands.

On the hillside community of Kissy, young girls and boys who are out of school can be sent to the bush to cut and then sell wood, during which time they access water to drink from unprotected sources.

Risky livelihood activities of the rural areas

Income generation in the rural areas is dominated by agriculture and depends on surplus. Men tend to provide more of the hard labour, through activities such as burning, ploughing, making heaps, and harvesting, while women and their children tend to do more of the painstaking maintenance of crops such as planting, nursing, watering seeds; transplanting; bird scaring; weeding; and harvesting. Women also undertake most of the post-harvest processing work, such as the production of palm oil and palm kernel oil, which are water-intensive activities. In general, while men tend to control income from rice and cash crops, women plant and maintain vegetable garden crops that provide hunger breakers and additional income for families, including ground nuts, cassava, and vegetables¹⁴.

In January and February, when water is beginning to dry into pools, the men are brushing, while women are fishing in streams and transplanting seedling into gardens. This is the time for harvesting swamp and upland rice, and for nursing and transplanting.

Drinking at the source is a risk for men, women, and children working in distant fields. In Fadugu, the research team met a young boy of about eight years who, like most of his siblings, did not go to school, but rather worked with his mother on the farm every day, except for Saturdays, which he spent selling soap for a neighbour in the town's *luma* market. When on the farm, he drinks water where he finds it from sources, sometimes using leaves to scoop the water, and he also defecates openly on the farm. These common practices of open defecation and drinking from water sources in fields and forests, combined with seasonal rains and flooding, create a perpetual risk of cholera contamination in the environment.

Box 2. Transmission at the *luma* market

Traders travel from surrounding villages by foot and car to attend the weekly *luma* market in Badala. To get an early start, most arrive on the Friday and spend the night with friends and relatives, or in the house of the Chief. Hosts can lodge as many as 30 people in a house. On those days, people share the drinking bucket, cup, sleeping area, and meals.

The first known cholera case arrived in Badala in September 2012, via a female student, returning home from Makeni. Her brother contracted the disease before the response was established. Residents linked a number of subsequent cases to the dynamics around *luma* days. The Chief's wife, obliged to host visiting traders, was one of the first to become sick. She was followed by a female trader, a small girl whose aunt lodged numerous guests, and a male baker who also hosted guests. All four fell sick on the days prior to or following the *luma*. Others to become sick around the same period included a nursing baby and a miner who commutes back to Badala at the weekend.

Hunting bush meat for subsistence and for sale is another activity performed exclusively by men and boys. Hunters may go into the bush for days, setting and checking traps and waiting for prey. During this time they may have difficulty accessing water, particularly in the dry season. March is the height of the dry season and it is the time when groups of up to 30 hired male labourers engage in the burning and ploughing of fields. To cope with water scarcity they carry drinking water, but it is never expected to be in sufficient supply for all; driven by thirst, men will seek out pockets of water, usually stagnant, in places such as sheltered tree hollows.

With the exception of trade in livestock and red meats, it is predominantly women who engage in inter-district trading of food, clothing, and household supplies. Women are also those most likely to go to market to purchase the necessary supplies for the household. Weekly *luma* markets take place at designated commercial centres, attracting traders and customers from surrounding villages. These crowded, weekly gatherings host the perfect conditions for cholera transmission.

Gold mining is the dominant livelihood activity of Segbeya. Unlike diamond mining, which requires harder physical labour and greater financial risks (and potential returns), gold mining, while physically intensive and relentless, is less demanding of physical power. In addition, it provides the kind of small but steady economic return that is attractive to women who have children to feed and keep in school. Therefore, while diamond mining is undertaken almost exclusively by young men, the process of gold mining is undertaken by both women and men, and even children. In Segbeya, most gold miners are women; they dig and wash sand in the streams and inlets near the settlement where they can keep a close watch on their children. The research team was told that most of the men had left for the day, mining in areas further away from the settlement. The gold mining process involves digging from a pit (which is done mainly by younger men) and softened earth is then shovelled into large pans which are taken down to the deep inlet and washed. At the end of the day, merchants come to purchase directly from the gold diggers (c. Le 30,000-40,000 per day). Children contribute to the income of their mothers by assisting in the process; the research team witnessed some older children, including a 12/13 year-old girl at the site, sell directly to merchants, keeping a portion of their profits.

Gold mining presents a number of cholera exposure risks. The water in which women and children stand to wash the gold is the same continuous stream of water that has passed through the drinking, bathing, washing, and defecation points. Workers often fill drinking containers directly from the stream or unprotected well (in the dry season) to carry to their work site. Digging gold is muddy work; young children who need to stay near their mothers can be observed sitting in the dirt and mud, often without the protection of clothing (boys) and chewing on objects picked up from the ground. Women do not stop to wash their hands before eating food with them on the site. Proper care of drinking buckets and cups is also not practiced, even post-sensitization.

In Badala, the team learnt of a cholera case where a male gold miner who commutes weekly to work had returned early after having fallen sick at the site.

Cholera exposure through community based activities

Open defecation creates a particular risk to cholera infection, as there is the highest risk of faecal contamination and less likelihood of proper hand washing. Open defecation was practiced to some extent in all of the sites visited. In Kroo Bay, however, open defecation is rampant and took place in crowded conditions. Male and female children can regularly be seen picking their way through rubbish to the edge of the filthy river, or stepping on objects to get to the centre of the river, where they then defecate.

There is a perception among adults in Kroo Bay that boys are difficult to control. On more than one occasion, the team was told '*boy pikin hard for control past girl pikin*'. Indeed, observation of the slum revealed that boys tend to be unsupervised. In contrast to girls of the same age who are kept close to the household or, who follow and assist older female relatives with their markets, boys as young as six can be seen gambling, swimming in the dirty river, and playing and urinating in the filthy public football field where pigs wallow in the mud. The combination of living in a putrid environment and the absence of adult supervision creates specific risks of contamination among the boys of Kroo Bay that do not appear to apply to the same extent to girls residing in the same area, or to boys residing upcountry or in other parts of Freetown. At particular risk are boys who do not attend school and live without parental or guardian care.

Schools are gathering points which create particular risks of transmission for boys and girls. Typical risk factors for transmission include playing in the field, purchasing foods from vendors that may be contaminated, use of latrines without hand washing stations, cleaning latrines (which can be assigned as a punishment by teachers), and drinking contaminated water. There was a large degree of variation between the schools observed, with some maintaining drinking buckets for individual classrooms, but normally still necessitating the use of shared drinking cups. In other cases, the school may be the only place where a child can reliably access clean drinking water and soap for hand washing, especially when guardians are out for the day and leave the home locked. The different standards of supervision and provision between private and public schools emerged as an issue during the research that could also affect cholera prevention and preparedness.

In urban areas it is commonplace for lower-income households, which cannot afford all of the ingredients required to cook a full meal at home, to eat at *bafas* (cheap canteens) located in permanent structures or under umbrellas and awnings on the street. Risks of contamination stem from reheated food, as old 'soup' is never discarded but is rather mixed into a fresh batch (which gets boiled), and the use of unclean spoons and bowls. Street eating in general is more prevalent among lower-income individuals and households and those who are working at a far distance from their homes. Men, women, boys, and girls are at equal risk when eating on the street.

Local 'ghettos', *poyo bafas*, *ataya bases*, and other popular locations to hangout, are structures that tend to predominantly attract men before and after working hours. In rural areas, men often stop at *poyo bafas* to drink palm wine. *Ataya* is a type of strong tea that men drink. Ghettos may also serve *ataya* or may simply be structures where young, unemployed and underemployed men gather and smoke marijuana and socialize. There may be a radio playing music, or a television in the case of a film house. Transmission may happen through the sharing of drinking cups for water, palm wine, or tea; tobacco and marijuana cigarettes; and food. It is the perception of men that the ones among them who lack regular income are more likely to share food/cooking, in order to pool their resources. In this case men use individual spoons rather than hands in order to prolong the eating experience, as they rarely eat to the point of satisfaction. There is a perception that women in urban areas are less likely to eat cookery if at all avoidable, because, as cooks themselves, they tend to be more discerning of the food that others prepare. The women who eat cookery and street food likewise have little choice, but are still less likely, in an urban setting, to eat from the same plate.

Individuals with physical and mental disabilities who are unable to look after their own water, hygiene, and sanitation needs experience specific risks of cholera contraction. Individuals with physical disabilities who suffer from limited mobility and the absence of accessible infrastructure often rely on the assistance of others to fetch drinking water and to help transport them to areas where they can use the toilet. The researchers spoke with an individual in Kroo Bay who was confined to a wheelchair without functioning wheels; his daily routine consisted of leaving the house, sitting in a public area where he would teach, and requesting water or assistance from children to help negotiate the terrain so that he could reach the wharf to relieve himself.

Those suffering from mental illness often roam the city looking for food, lacking the mental ability to select appropriate food to eat and to practice good hygiene. The dire state of mental health support in Sierra Leone means that individuals with varying degrees of mental illness are often given the same treatment of sedation, which is often overseen by staff that do not understand and sometimes even fear their conditions. Many patients in the psychiatric hospital, particularly in the men's ward, are restrained by chains to their beds, and depend on the assistance of the staff to fetch their drinking water, empty their stool buckets, and wash them on a three-to-five day rotation. Toilet facilities are blocked and highly unhygienic, and drinking water is not treated. Food is often insufficient for patients and some have family members who supplement their diets. The majority of patients tend to be men, as families are quicker to identify mental illness as a problem that requires containment among men. The vulnerability of individuals with physical and mental disability is therefore also heightened by their reliance on the hygiene practices of those individuals who assist them.

Celebrations are gathering points for large crowds that can facilitate transmission of cholera. The height of the festive period coincides with the start of the harvest, after the rainy season has ended and food is in abundance. October through to December in rural areas marks the start of the large-scale rice harvest season, a time of marriages, pregnancies, and initiations into secret societies. The traditional festive season begins with the closure of schools in December and the start of society initiation practices among boys and girls, running through Christmas and the New Year. It is marked by parades, street parties, and celebrations involving sharing of food and drink. It tends to be the time of year when higher-income couples wed in the large cities, though in Kroo Bay young people remarked that it is rare to see formal marriages. Festivals punctuate the months of February (St. Valentine's Day), April (Easter and Independence Day), and May (Bob Marley Day). The December, January, and April celebrations are marked in addition by lengthy and intense parades, with neighbourhoods coming together to build ornately decorated 'devils' or costumed men who project power, fun, and intimidation in the streets. Few celebrations are held during the rainy season, when water-borne disease outbreaks tend to magnify, with the exception of Ramadan which moves with the Islamic calendar and can fall in both the rainy or dry season. Muslim marriages also take place around Ramadan.

The Islamic practice of ablution is another potential point of transmission. Ablution is the ritual cleansing of the face, head, and hands, performed before daily prayers. Water *kula* are plastic teapot-shaped water vessels which are normally taken into latrines and wash yards to wash the body and bottom after defecation; contamination of the spout is possible if hands used to wipe the bottom come into contact with the spout and oral contamination can then occur when the *kula* is used for washing the face. The need to hold the handle with one hand often means the handle is frequently in contact with unwashed hands.

Peripheral Health Units where cholera cases are treated are another hotspot for transmission. The PHUs visited by the research team in Tonkolili District and Koinadugu District described infection control practices including separating cholera patients from other patients, frequent hand washing, and limiting caretaking to one family member, which are likely to have contributed to containment of the disease. In some cases PHUs play a role in delaying proper treatment; in one such example, a Kroo Bay fisherman who had become violently ill after eating *fry fry* in the street was denied treatment at the community health centre (CHC) until he paid Le 15,000 (all the money he was carrying). His case became so severe that in the end he had to be referred to Connaught Hospital.

Transport systems facilitate transmission. In Badala, the first cholera case in the commercial centre of the mining Chiefdom was that of a young, student girl, who had returned home from Makeni to visit her family. She became sick immediately on her arrival, suggesting she contracted the illness on the journey and may have transmitted it to fellow travellers.

In particular, the transport of the sick and of dead bodies, particularly between rural villages and PHUs, was a key, yet neglected aspect of the response. The long distances and poor road networks upcountry mean that sick patients can either be transported on foot by hammock, or by *okada* (commercial motorcycles) when the community pools its funds and one is available. Transport roles are almost exclusively male and no protective barriers are used to protect the rider from the fluids of the patient holding on to him or the dead body that may be attached to him. In Tonkolili District the research team learnt of an *okada* rider who contracted cholera from the patient he was carrying and then spread it to his own community. In Freetown, staff at the Kroo Bay PHU explained that nurses are responsible for sanitizing taxis that have transported sick patients for treatment, but in practice this scenario often presents challenges, namely that taxi drivers who receive payment are not likely to wait for nurses, who themselves are usually too busy looking after patients. This is particularly the case for clinics such as Kroo Bay CHC, which have no road access.

Funeral rites in the context of a cholera death can be highly contagious for those involved, through contamination from body fluids of the deceased. Both upcountry and in Freetown, funeral rites share a number of similarities. The body of the deceased is always ceremonially washed by members of the same sex – normally elders of the family or neighbourhood. Neighbours and friends will call upon the home of the deceased to offer their condolences, at times looking at the body, but it is not touched after washing. Food is prepared for visiting guests by the female relatives of the deceased. If the deceased was a prayerful person, the body will be taken to the mosque or church for prayers. In funeral processions, the body is always transported to the site for prayer or burial by men. Digging of the grave and burial is also performed by men. Christian burials take place in a coffin, while the Muslim bodies are wrapped in white satin and lowered onto sticks at the base of the grave. Burials in Freetown take place in cemeteries, while upcountry, the research team encountered several examples of backyard burial in shallow graves; this was the case for the body of the first cholera victim in Masugbay, who was believed to have initiated the spread of the disease there and in the neighbouring village.

A major difference between Christian and Islamic burials is the length of time between death and burial; Islamic burials take place the day of the death, while Christian funerals can take place days and even a month after death, depending on the socio-economic status of the individual and family and the distance travelled by relations. Bodies can be stored in the morgue for extended periods if visitors are expected from overseas. Such cases may involve more elaborate preparation of hair, makeup, and finest clothing for the body.

The research team also learnt that rituals which can increase cholera vulnerability may occur in the case of the death of a high-ranking traditional leader. The burial of paramount Chiefs requires a significant level of ceremony, ritual, and secrecy, which varies among ethnic groups and societies. Depending on the specific tradition, there is a risk that the body can be exposed for a prolonged period to members of the society.

Access and control of resources for preventing and containing an outbreak

While gender roles can facilitate or mitigate direct exposure to cholera, underlying issues of power and the access and control of key resources also affects an individual's capacity to protect himself or herself against the disease. Under consideration are those key resources that are essential in containing the spread of cholera in an outbreak: clean water for drinking and washing plates, soap, and treatment. Control issues around these resources consider the custody, maintenance, and responsibility for supplying them from personal income generation.

Barriers to safe drinking water

Access to safe drinking water is perhaps the most crucial element required to prevent cholera. As the primary collectors of water for domestic use in rural and urban areas, women play a critical role in mediating the exposure of a household. They are in a position to spread contamination but also have the power to safeguard the household water supply. However, even in communities such as Masugbay that were rocked by numerous deaths, and where women were determined to play their part in preventing the sickness from returning, women face a number of barriers in maintaining clean water supply after the distributed aquatabs and chlorine supplies run out.

In rural areas, aquatabs and chlorox are not easily available. Furthermore, cash can be a constraint for women, who would be expected to supply them as the providers of food and water. The only feasible option in this context is to boil drinking water, which increases the workload for women and children, who must spend additional hours fetching wood and boiling the water. The cost-benefit calculation takes into consideration the size of the pot available to boil water and the volume of water required by the household. The greater the quantity of water required, the less likely the women and girls managing the household will be able to provide it on demand.

While availability is not a problem in Freetown, affordability of water treatment supplies is a barrier for poorer households struggling to feed all family members. In addition to the above time and resource calculation, boiling water also incurs financial costs to women in urban households, who are responsible for the purchase of coal or wood to start the fire. The cost to boil one pot of water may be around Le 2,000, depending on its size. In the dry season this cost will be added to user fees for wells or fees per bucket. Those who can afford to drink clean water will likely prefer the ease of use of water treatment products, or instead purchase bagged water.

In polygamous households, issues of ownership and control of domestic appliances and tasks can be daily battles. Polygamous mates may share the same pot and eat from the same plate, but they do not normally share drinking water, given the need for large quantities of water to maintain families. In Sansugbeh the research team spoke with members of a household who each had their own drinking bucket – one had monopolized the Oxfam distribution supplied and preserved them for herself, her children, and the husband on nights he spent with her. Mates are responsible for purchasing and maintaining the drinking buckets that they and their children use. In general male heads of household supply very little in terms of domestic articles, which, unless supplied in duplicate/triplicate to each wife, risk inflaming jealousies. In cases where there is a single drinking bucket in the parlour, there can be conflict over the sharing of responsibility for maintaining water supply.

Those with least control over their access to clean water are usually children and those with physical or mental disabilities. Drinking buckets may be kept in the bedrooms of mothers, or in the parlour, where shared access is possible. In rural and urban areas, is common for adults to lock individual rooms during the day when they are out of the house. As such, children whose parents are out from the early morning until the evening are often prevented from accessing clean drinking water, unless it can be accessed at school or from a relative or neighbour.

Barriers to good hygiene

In addition to water access, which is limited in dry season by scarcity and user fees (in Freetown), access to soap can be a barrier to maintaining good hygiene, in particular for hand washing at critical times.

Soap is a precious commodity, because of the time and seasonally available resources required to produce it by women in rural areas, and among lower-income households in urban areas which may not be able to afford even limited usage. Women have custody of the soap and are responsible for supplying it for the household; exceptions are for young people who are not living under parental care and young, unmarried men for whom no one else will likely purchase soap.

Children are frequently prevented or restricted from using soap, because they are perceived to waste it through overuse (rubbing soap on hair) and misuse (using soap to wash clothes). Therefore, use of the soap is normally highly regulated by mothers, in some cases for bathing only or for adult usage only. Children may even limit their own use of soap, for fear of provoking adult reprimand.

Domestic hand washing stations are practically non-existent, due to the concern that soap will be stolen; 'if I leave the soap even for one hour, it will be gone', said a mother in Kissy. In Badala, one woman described her preference for ash for hand washing at the latrine, because they are easily obtained and unlikely to be stolen.

Those with severe physical and mental disabilities who rely on assisted hygiene maintenance may experience reduced access to water for bathing. Women and girls face additional constraints during menstruation. Access to soap is also likely to be more limited in rural areas, if it cannot be produced locally, and for urban families that live hand-to-mouth.

Timely access to treatment

In rural areas, where the distance from the home to PHUs can be considerable, individual households do not normally have the funds to pay for an *okada* rider to carry sick patients (c. Le 25,000 from Masugbay to Mile 91) so communities will often collect money for this purpose from existing male and female groups. In the absence motorized transport, the person may be transported on foot, by hammock.

Self-determination of women and women's mobility is a lesser issue in the context of health emergencies than in it has been in the past. Although many women continue to consult their husbands before taking decisions that relate to issues falling outside of their daily areas of responsibility, a woman will almost never be prevented, or avoid taking the decision, to seek treatment or to take a sick family member for treatment in a serious case.

A more likely barrier to seeking treatment is the stigma which may prevent certain community members from accessing community facilities such as ORPs and volunteers. Generally, stigma is the social consequence resulting from non-conformity with an existing social norm. In all of the sites visited, hygiene practices did not appear to be so well-established as to result in stigmatization of illnesses associated with poor water, sanitation, and hygiene. The one exception was in Kissy, where BFVs explained that a considerable number of those affected by cholera had avoided the community response system altogether, preferring to go directly to the PHU to avoid recognition. Although it was not possible to speak with individuals who had a high awareness of stigmatization of cholera, BFVs felt that those individuals made a strong association between cholera and uncleanness associated with poverty and low socio-economic status.

Table 1. Barriers to adequate hygiene

BARRIER	GROUP CONTROLLING THE BARRIER AND ACCESS	GROUP AFFECTED BY BARRIER	CONTEXT
CLEAN WATER			
<i>Access to drinking bucket</i>	Parents, especially mothers and adult female caretakers	Children	Locking of room or parlour while parent is out in the day
<i>User fees</i>	Fees paid by the women	Entire households	Urban (Kissy) weekly fees, fees per bucket
<i>Availability and accessibility (cost) of aquatabs and bleach</i>	Women generally purchase products to clean water	Entire household	Low availability of aquatabs and bleach in rural areas
<i>Time: collecting wood, boiling water</i> <i>Cost: coal to boil water</i> <i>Factor: size of the pot for boiling water and number in household</i>	Women are responsible for supplying fuel to cook food and boil water	Entire household	Wood can be accessed from the bush to boil water in rural areas, coal must be purchased in urban areas
<i>Access to drinking bucket</i>	Polygamous mates purchase their own drinking buckets and restrict use to their own children	Mate and her children	In polygamous families
<i>Physical disability and severely reduced mobility of individuals and inaccessible infrastructure</i>	Dependence on others, especially children, to access clean water	Physically and mentally disabled , the sick, and infirm	Inaccessible urban and rural environments
SOAP			
<i>Time for hand washing</i>	Miners don't leave pits to wash hands when food is brought to them	Adults and children at the mine	Miners in Segbeya
<i>Restricted use of soap</i>	Mothers and adult female caretakers have custody of the soap and are responsible for supplying it	Children (boys and girls)	Soap can be locked in the house during the day time

BARRIER	GROUP CONTROLLING THE BARRIER AND ACCESS	GROUP AFFECTED BY BARRIER	CONTEXT
<i>Cost of purchasing soap</i>	Women purchase soap for themselves and the family Unmarried men purchase their own soap	Low income households, children without adult care	Urban issue as women in rural areas tend to make their own soap
<i>Restricted physical mobility and access to soap and water/washing spaces</i>	Dependence on other individuals, especially children, to assist with washing	Physically disabled Women and girls during menstruation	Inaccessible urban and rural environments
TREATMENT			
<i>Distance to PHU clinics</i> <i>Cost of rural transport</i>	Most households lack resources for transport; communities often come together to raise funds	Families of the sick	Rural areas transport is provided by hammock transported by men, or by <i>okada</i>
<i>Mobility and self-determination</i>	In rural areas, tendency for married women to take decisions falling outside the daily norm with husbands. Husbands have final say, but this is changing	Women, children	Decision-making and self-determination issues regarding treatment seeking does not appear to be gendered in the cholera emergency context
<i>Stigma</i>	Issue or perception rather than control	People with cholera symptoms, particularly from mid-to high-socio-economic status	Stigma not encountered in rural areas or in slum, where there are no established social norms about good hygiene. In Kissy, some associate cholera with poor hygiene and lower socio-economic status

Awareness, beliefs, and behaviour change

Awareness of the four key messages

The team began research as Oxfam was in the closing stages of its emergency intervention; therefore, the response was still at the forefront of people's minds. With several exceptions, the team observed a high level of awareness of the four key cholera messages, with most individuals being able to list off at least three messages when prompted to talk about cholera or, 'Pa Choleh' as it is frequently known:

- drink chlorinated water;
- wash hands before putting anything in your mouth;
- when sick go to closest medical centre;
- rehydrate with ORS or homemade solution to prevent dehydration.

Many also were able to provide additional information, such as the need to keep a clean environment, the need to cover food, and to use latrines and avoid open defecation.

The research team observed that individuals in Masugbay and Makoba Bana (communities that had experienced sickness and death, but which had had little in the way of prior WASH sensitization) were well informed. As a male BFV explained of his village, before the intervention: 'we never knew aquatabs or chlorine and water. We never knew you should wash with clean water and soap after toilet and before eating'. In Makoba Bana, which hosted a PHU that witnessed a large number of cases and a death, children were even able to explain that cholera can be contracted from visiting a sick patient and that only one person should take care of the sick. These children explained that they had first learned this in school and at the PHU and some of them had gone on to inform their parents.

In Masugbay, the village that had experienced six deaths, male elders explained that they had heard about cholera before the Old Pa died, on the radio and via the *okada* riders who provide transport of people and goods, with which relatives had sent messages.

In Rokimbie and Sansugbeh, the team encountered individuals who thought they had cholera, but actually had other illnesses, suggesting a more theoretical than practical understanding of the disease. In areas, such as Badala, which experienced no deaths, the primary school students had less knowledge of the symptoms and causes of cholera than those in other areas. For children who are not invited to attend community meetings, learning would take place through other channels. In some communities, boys with free time learned first via radio at a neighbour's house, before hearing it again at school and from volunteers, while in other rural communities, some girls also learned through radios at home. Out of school girls and boys were more likely to find out about cholera from relatives. In Segbeya, where there is no school, the awareness children had was low, and what knowledge existed was gained from parents and older siblings.

When meetings were held in a neighbouring village (e.g. Sawuria for Kakoya), many women would stay home rather than attend the meetings and would learn through husbands and later from house-to-house visits of volunteers. In Segbeya, women had noticeably lower levels of knowledge about cholera as most had been out at the mines and had not known that a meeting had taken place.

Generally, it was observed that those with radios in inland rural communities tended to be men, and boys would often have the time to stop and listen. Women are more likely to be engaged in domestic tasks and are less likely to have ownership of a radio.

In contrast, in Freetown, most individuals of all social categories first learnt about cholera on the radio. Even in Kroo Bay, most young men and women own mobile phones and even without credit, are able to access radio stations as long as they can charge their batteries. Young girls engaged in collecting water before attending junior secondary school explained that most did not own phones and they first learnt of the disease via their parents' radios.

Missing link: logic of transmission and sickness

While many were able to recite key messages, they appeared to lack knowledge about the source of cholera. In Kakoya Village, women who had some knowledge of practices associated with cholera transmission did not know, except for one younger woman, that the disease is contained in faeces.

The research team found in several places in Koinadugu District in particular, that individuals who could describe contexts of transmission could not explain how they or their children could have contracted cholera in a specific instance. The onset of sickness in the middle of the night would be puzzling for mothers or other individuals who would be quick to explain that they hadn't eaten anything out of the ordinary. Many individuals looked to explanations surrounding food and water, but not necessarily considering all possible options, such as hand washing and person-to-person transmission.

Beliefs associated with cholera

The research team encountered a number of beliefs associated with the symptoms of cholera, or beliefs describing practices that could enhance the vulnerability of certain individuals.

Table 2. Beliefs relating to cholera

BELIEF	WHERE OBSERVED	IMPLICATION
<i>Cholera is due to evil spirits, and mourning the dead loudly can bring about a curse.</i>	Masugbay. Residents talked about this belief as being in the past, now that they have become better informed	Explanation for infection and spread of disease, possibly in a funeral context
<i>Cholera is airborne</i> <i>It is carried in the stench of faeces</i>	Kroo Bay, where the dust of the Harmattan wind mixes with the filth of the slum and is thought to cause infection Rokimbie, Tonkolili District Segbeya, Koinadugu District	The four key messages do not address this belief; resulting confusion may discourage behaviour change. Explanation of cholera among those who are economically better off
<i>Cholera affects only the rich/does not affect the poor</i>	Kissy, in a neighbourhood that had no local cases. Those with mental illness are observed to eat rubbish in the area, yet they do not get sick, yet a well-known rich man died, who had all the necessary facilities (access to running water and latrines).	Lack of understanding about why cholera is sometimes present in filth and not other times may discourage behaviour change Assumption that socio-economic status dictates hygiene practices
<i>Cholera is associated with poverty and poor hygiene and is stigmatized</i>	Kissy, volunteers cited a high number of cases that were not disclosed to ORPs but were taken directly to clinics to avoid public knowledge	Delayed treatment

BELIEF	WHERE OBSERVED	IMPLICATION
<p><i>D&V symptoms among women are early signs of pregnancy, among men are signs of drunkenness, among children and elderly women are signs of overeating.</i></p> <p><i>D&V among infants is caused by mother sleeping outside the marriage (bamfa)</i></p>	<p>Rokimbie, Tonkolili District</p> <p>Widespread belief</p>	<p>Ignoring symptoms of cholera, delayed treatment</p>
<p><i>Boys who nurse too long become fools</i></p>	<p>Badala, Koinadugu District PHU discussion</p> <p>More D&V cases among children under five observed in Tonkolili District despite predominance of female births</p>	<p>Boys are socialized from infancy to live up to a general notion of masculinity. Reduced lengths of breastfeeding may weaken their constitution, enhance their vulnerability to infection, and increase risk of exposure from drinking contaminated water</p>
<p><i>Eating from the same bowl as a dog cures stammering</i></p>	<p>Rokimbie, Tonkolili District</p>	<p>Possible source of transmission</p>
<p><i>Chlorine is a way for white men to reduce the population</i></p> <p><i>Chlorine is for laundering clothes and has a bad taste</i></p>	<p>Fadugu, Koinadugu District</p> <p>Segbeya, Koinadugu District, Kissy, Freetown</p>	<p>Non-use of water treatment products</p>

Behaviour change

Areas such as Makoba Bana and Masugbay which experienced deaths from cholera were more sombre and serious about the need for behaviour change. However, when pressed on how they would keep up improved practices, in particular the practice of cleaning water in the dry season during water shortages, men and women admitted that they would ultimately have to return to old practices and put their faith in God to protect them.

In other places such as Rokimbie, and in Sansugbeh where no deaths had occurred, it was observed that cholera was not taken very seriously, with community members laughing or lying in attempts to cover up unhygienic practices they did not want us to observe.

In Freetown, in contrast with the sites visited upcountry, the team had the sense that hygiene and sanitation messaging were not entirely new. There was however, a sense that behaviour change is far from established, mostly due to the combination of filthy environments that are not amenable to upkeep of regular hygiene practices, and to the financial constraints of the lowest-income segments the team encountered.

Even in areas that had experienced heavy awareness raising and distribution, the team observed the continuation of risky and incorrect practices, such as:

- using receptacles other than the original cup and handle (e.g. bowl) to scoop water from drinking buckets;
- immersing part of the hand in the water;
- unclean drinking buckets (distribution and non-distribution);
- sharing of drinking cups and leaving drinking cups with water in them;
- the use of bleach for washing clothes (Segbeya) and for sale (Freetown);
- wiping hands on clothes after washing a child's bottom (Kroo Bay);
- asking a child to clean a toddler's bottom without checking proper hygiene is observed (Kakoya);
- drinking directly from streams (Segbeya), taps (Kissy), and wells (Kroo Bay);
- the use of distribution soap for bathing rather than hand washing (although improving the skin problems of men in Kakoya);
- retaining treated drinking water for as many as three days.

In general, there appeared to be a preference for aquatabs over bleach. In Kroo Bay and in Kissy there was greater resistance to treating water due to the bad taste of chlorine.

SUMMARY REMARKS ON THE GENDER ANALYSIS

Qualitative research from Sierra Leone appears to support the hypothesis that gender roles in a given environment or livelihood zone influence factors affecting vulnerability, including exposure, access to clean water, hygiene, and food preparation practices, as well as awareness.

Women and young girls appear to be exposed to contamination in the domestic realm, in particular during the role of caring for babies and the sick, whereas in some urban contexts, males appear to be more vulnerable to infection, presumably due to their hygiene and eating practices on the street. Preliminary findings indicate that boys living without parental or adult supervision in urban slums may also be exposed to different forms of transmission from girls, although girls are more likely to experience transmission routes relating to reproductive roles, in particular, from caring for babies. Eating practices vary with gender, age, economic status, household configuration, and urban/rural context, and high-risk food sharing practices (eating from the same bowl) may be more common among women in rural areas and unemployed men in urban areas. Certain productive activities position men and women at higher risk of exposure, such as *okada* riding among men and fish processing and selling among women. Community gathering points such as markets may also contribute to gendered patterns of exposure. Access to clean water and soap is inequitable within households, with children, and in some cases, the children of secondary polygamous mates experience reduced access. Awareness levels of cholera transmission and prevention appear also to vary with gender in relation to remote and traditionally organized rural areas. Quantitative research is needed to validate the broad findings of this gender analysis.

Due to their gender roles, women possess the ability and influence to be able to protect family units from contamination, however their disproportionate responsibility for carrying out reproductive tasks and for bearing associated financial costs are barriers to behavioural change for everyone.

Understanding gender roles and underlying issues of power, control over resources, and decision-making in a given context is therefore considered necessary to predict likely transmission modes of men, women, girls, and boys in a cholera outbreak, in order to develop a more targeted humanitarian response.

5 ASSESSMENT OF OXFAM'S RESPONSE AND RECOMMENDATIONS

Oxfam's cholera response

Oxfam has been a member of the National Cholera Task Force since its activation in response to the outbreak. Through its leadership of the Urban WASH Consortium, Oxfam lobbied WHO and UNICEF to scale-up support for the outbreak after it started in Kambia.

Oxfam's initial strategy was to focus on areas where it was already working (10 Freetown city sections and Chiefdoms in Koinadugu District) through cholera prevention activities, consisting principally of the training of BFVs in operational city sections with MOHS. By 22 July 2012, after Oxfam had received surge capacity of a Cholera Coordinator and additional programme staff, it carried out a rapid assessment and developed a strategy to assist with the coverage of an additional 11 Freetown city sections and Chiefdoms in Tonkolili District. This involved the following prevention and response activities: chlorination of water points, setting up of oral rehydration treatment points, and distribution of cholera prevention kits. Community mobilization and hygiene promotion took place through radio, volunteer outreach workers (existing and new BFVs), and information, education, and communication (IEC) materials.

Based on its capacity and the identification of 'hot spots', Oxfam targeted 20 Freetown city sections where it had operations, and in addition provided support for selected Chiefdoms in two Districts – Tonkolili District, at the request of Concern for support, and Koinadugu District, as an area where it had previously supported the development of WASH committees.

Upcountry, the response involved blanket distribution, based on community registrations led by volunteers. Because of delays in accessing data, District-based Oxfam teams would therefore identify hot spots to target by visiting PHUs within their designated Chiefdoms. Hot spots within a PHU catchment area would be followed up with a discussion with the Chief, before requesting the community to select volunteers. In Freetown, distribution was based upon the identification of vulnerable segments of the population, as determined by BFVs.

Where possible, Oxfam built upon existing structures and relationships. Volunteers in Koinadugu District were drawn from WASH committees who would cover large areas with their outreach activities, while in Tonkolili District, which had no pre-existing WASH committees, volunteers tended to be selected from within local communities, and may not have previously held formal positions within the community. In Freetown, meetings were called attracting existing BFVs who were asked to cross a line if they were willing to work hard for free to help their communities. The result was a mix of old and new BFVs and chlorinators who were then given specific training in key messages and briefed on implementation strategy.

Gender in the cholera response

Gender considerations were not part of Oxfam's contingency plan, or evident in its strategy on paper; however, at the level of implementation, Oxfam made attempts to involve women and men in the response, through the selection of BFVs, and in their emphasis on targeting women and men within the household, and at female and male based gathering points.

Oxfam is not unique in this respect; caught off-guard by the outbreak without a publicized and comprehensive contingency plan, assembling high-level coordination mechanism(s) and initiating the implementation of a coordinated response on the ground. The focus was exclusively upon saving lives, not integrating gender into the response. Without a high-level gender focal point from the Government of Sierra Leone (GOSL) to steer the course, no gender analysis was carried out, and therefore the response could not address gender issues.

Cholera treatment centres in Freetown, for instance, coping with the high volume of cases did not separate male and female patients. At their most vulnerable and exposed, patients lacked the privacy they would have been assured under normal circumstances¹⁵. The effect of this type of management would presumably have had an impact on the public perception of the disease and its response. It could further have had the effect of reinforcing stigmatization with the perverse result of discouraging referral to PHUs. This issue, while beyond the scope of this assignment, should be noted for future planning and monitoring.

Although the issue had been raised by UNICEF within the Task Force¹⁶, routine surveillance reports ceased to be disaggregated by sex, focusing rather on age. No rapid gender analysis was carried out, and so partners in the response were left to integrate their own gender equality standards. However, several general observations should be noted about the effectiveness of Oxfam's cholera response.

On the whole, it is important to note the role of the response in helping to contain the spread of cholera, particularly through the use of ORT points. This was particularly evident in communities of Makoba Bana in Tonkolili District and Badala in Koinadugu District, which had experienced a series of cholera cases where the spread was rapidly reduced with the support of active BFVs who isolated patients and provided treatment. Given the later arrival of the outbreak in these areas, Oxfam was also better prepared to respond at an earlier stage.

Furthermore, in terms of raising awareness, the method of house-to-house outreach was an effective way of reaching all members of the household with key messages, including women and girls, in addition to the formal meetings in key gathering points.

It is important to note the positive impact of the BFV structure, particularly in rural areas, which helped unrecognized community members, including a large number of young women, to play an important public role in serving their communities. Oxfam should build on these gains, to catalyze CLTS processes and to promote gender transformative programming.

Priority recommendations for emergency preparedness and response in Sierra Leone

Oxfam should prioritize the following actions:

1. **Lobby the government and provide support for a coordinated data surveillance system** that analyses sex and age-disaggregated data and that captures and provides timely monitoring of community deaths, cases treated outside PHUs, under-five cases, and cases among pregnant women. A high level Gender Focal Point who has decision making authority within the National Cholera Task Force needs to be involved in the oversight.

2. **Talk to women and girls in rapid assessments of hot spots.** Avoid talking only to male traditional leaders and representatives on the first visit. Women and girls can shed light on the health of babies and children and can signal any unusual patterns in D&V.
3. **Ensure transparent selection criteria for volunteers** to minimize the risk of bias. Set criteria for gender balance and encourage the participation of girls and younger women with basic literacy.
4. **Target key groups that were missed out in awareness raising**, especially *okada* riders in rural areas and other transport sector workers who have the potential to spread disease or early warning messages; out of school children who are not invited to meetings and who are not consistently informed about cholera messages by adults; and women, men, and children on their work sites. It is important to ensure linkages in awareness raising between city sections, to ensure that women, men, boys, and girls are targeted both at home and in their livelihood zones where different contexts of transmission apply.
5. **Ensure the most vulnerable categories are defined and targeted in each community in the preparedness phase.** Consider those women who have the largest burden of prevention and the least support, whether widows, polygamous mates, those tending to people with disabilities or who are sick, or single mothers who must carry their babies while they work and who lack access to hand washing facilities, as well as the physically and mentally disabled, child-headed households, and in urban areas, 'strangers' and newcomers who have weaker social networks. Hold registration and assessment processes well in advance, to allow for a better understanding of intra-household dynamics within communities. Avoid a situation where BFVs or other actors who are perceived to be biased, determine the most vulnerable households.
6. **In complex household structures, ensure each polygamous mate has her own drinking bucket and water treatment supply.** If not possible, encourage male heads of households to find a way to ensure all wives and children are guaranteed their right to safe water.
7. **Use volunteers to challenge inequitable gender norms that adversely affect the ability of communities to prevent and respond to cholera outbreaks.** Encourage young females into non-traditional roles such as chlorinators, and males to be role models in the home, by helping to reduce the workload of women and children. Create opportunities for communities to recognize positive deviants, such as the husbands and boyfriends who are protecting their families by helping to fetch and treat water and care for the sick, and the girls and women who are playing leadership roles in the area of WASH. Finally, provide positive reinforcement such as public recognition to volunteers and committees, including chairpersons, who have demonstrated excellent leadership.
8. **Use radio messaging, posters, and drama to challenge mistaken beliefs and inequitable gender norms in the domestic realm.** Correct mistaken beliefs about cholera and illustrate how transmission can happen between different social classes and within particularly vulnerable contexts, such as *luma* markets, car parks, and on rural and urban work sites. Challenge assumptions about women being the only ones who can take action to prevent and respond to cholera with examples of positive deviance.
9. **Involve sex and age-segregated CBOs and schools.** Work more closely with schools by helping to develop activities for school health clubs and by working with active mother's clubs and parent's associations to challenge them to create cholera free zones for the children of their communities. Identify strong female-led organizations and male organizations to work with, ideally working with women and men separately. Encourage girls and boys to play a leadership role in their neighbourhoods, through existing clubs and structures. Use the registration process to carry out an analysis of actors who can be resources for preventing and containing an outbreak.
10. **Establish links with key institutions and companies in operational areas**, for example, the psychiatric hospital in Kissy or Addax Bioenergy in Tonkolili District. Ensure large institutions and companies with links to community members through service provision are playing their role in the response.

Table 3. Analysis of Oxfam’s emergency response and recommendations

ASPECT	ISSUES OBSERVED	RECOMMENDATIONS
EARLY WARNING AND EMERGENCY PREPAREDNESS		
<i>Establishing links with new communities/assessing and initiating the response</i>	Initial assessments with Chiefs and community elders tend to be male-dominated and may not bring to light gender and age-specific risks	Initial assessments by PHP and PHE leaders and Programme Managers with Chiefs should include female leaders and young men and women in order to rapidly assess gendered transmission issues and signals, such as a steep increase in D&V cases among under-fives
<i>Early warning and situation assessment</i>	Gender dimensions of vulnerability not assessed at outset (by Oxfam or in national response)/no monitoring of sex-disaggregated data and of emerging sex-age-region patterns	Gendered patterns in the outbreak may support indications of origin and transmission routes of contamination. Lobby GOSL and partners at high level and Districts to coordinate the routine collection and analysis of sex and age-disaggregated data from the outset, including data on under-fives and cases of pregnant women
<i>Selection and training of volunteers</i>	<p>Selections made by Chief (rural) or powerful community actors (urban) based on sentiment, factionalism. and arrangements for mutual benefit</p> <p>The response has been a platform providing community recognition and respect to volunteers, as well as a sense of identity and importance</p> <p>Mix of male and female PHP volunteers, favouring younger men upcountry. Chlorinators are predominantly male</p> <p>Upcountry, communities where young women are discouraged by male partners from playing high-profile community roles requiring mobility. This is changing in some areas, but often still a preference for older, senior women above child-bearing age, frequently Traditional Birth Attendants. Also many examples of communities where girls with and without children played an active role</p>	<p>Selection should not be purely in hands of a Chief or powerful chairman. Biased selection can be mitigated if Oxfam provides clear criteria for selection - motivated individuals who represent a cross-section of different areas and social groups within the community, balanced male and female. WASH committees do not need to be partners by default, but can be kept in check by other strong community groups and actors, especially female-led organizations</p> <p>Oxfam should encourage females, particularly young interested females with basic literacy, to become involved in non-traditional roles, such as chlorination</p>

ASPECT	ISSUES OBSERVED	RECOMMENDATIONS
<i>Registration/defining vulnerability criteria</i>	<p>Urban areas did not undertake house-to-house registration but relied on knowledge of local actors to identify individuals 'known to be vulnerable' by prominent leaders of youth groups (Kissy) and community-based organizations or by the WASH committee itself (Kroo Bay). No set vulnerability criteria in urban areas to guide distribution</p> <p>Across urban and rural settings, individuals who should have been included among the vulnerable qualifying groups were overlooked in the distribution</p> <p>Rural registration of polygamous households is problematic. Assumption that polygamous mates sharing the same pot to cook and eat will share drinking water supplies is incorrect</p>	<p>Carry out detailed community registrations well in advance of emergency in urban as well as rural operational areas. Focus on gender issues including household structures and roles, issues of access and control relating to cholera vulnerability (e.g. clean water, soap, food, treatment for sick)</p> <p>Map out and assess social capital of community-based organizations and local institutions for possible partnership (especially women's groups, mother's clubs with linkages to schools, and children's groups). Involve members of the community in validating locally relevant vulnerability criteria</p>
IMPLEMENTATION OF EMERGENCY RESPONSE		
<i>Equitable participation of volunteers</i>	<p>Variability in the level and quality of participation of female members of volunteers and WASH committees, in both rural and urban settings. Observed examples of encouraging and supportive male leadership (Kissy) combined with active and vocal female participation (Badala, Koinadugu District), as well as instances of unmitigated dominance of male leadership (Kroo Bay) that utterly silenced female participants and some male participants, suggesting tokenism at the level of involvement in discussion of important issues and decision-making</p>	<p>Oxfam should encourage good leadership among WASH and volunteer structures should be defined, noted, and publicly recognized or rewarded</p> <p>Oxfam should monitor the level of volunteer participation and quality of leadership throughout</p>

ASPECT	ISSUES OBSERVED	RECOMMENDATIONS
<p><i>Awareness raising/targeting</i></p>	<p>Radio was first to reach people with knowledge of the outbreak in rural and urban areas. In one case, news also reached villages by <i>okada</i> riders involved in transporting the sick, prior to Oxfam's arrival</p> <p>House-to-house sensitization in rural areas apparently effective in raising awareness about cholera and the four key messages. But in Segbeya, women had noticeably low awareness, many did not know about meetings</p> <p>Source of disease and logic of transmission not well understood. Prevalence of beliefs about who is affected</p> <p>No awareness raising for transport workers, especially <i>okada</i> riders. Inconsistent awareness raising with schools. No attempts to target out of school children and children living without the care of guardians</p> <p>Coordinating by city sections in Freetown means Oxfam is not involved in sensitization in parts of city where men and women go to seek work</p>	<p>Continued use of radio broadcasting of messages at earliest possible opportunity. Radio programmes considering best times of day and means for targeting women and children</p> <p>House-to-house sensitization in early morning and evening hours by volunteers is a good practice that should be continued, along with the practice of going to sex and age-specific gathering points</p> <p>Use of radio and print serial dramas that illustrate logic of oral contamination and transmission routes, and highlight interlinkages between individuals of different social class, sex, age, and occupations is important to dispel myths. Visual media and characters should be developed that appeal to the identities of different sex, age, and class categories.</p> <p>Continued use of drama, possibly involving girls and boys and members of differing social status groups. Encourage opportunities for public question and answers</p> <p>Target transport sector (<i>okada</i> drivers upcountry, taxi and <i>poda</i> drivers) as well as children in and out of school</p> <p>At the level of coordination, consider developing joint communication strategies with those city sections where men and women congregate for work and transport to ensure men and women are covered while working, not just at home (e.g. key markets, Water Quay, central car parks)</p> <p>Develop gender and occupation-oriented messages</p>

ASPECT	ISSUES OBSERVED	RECOMMENDATIONS
<p><i>Participation of community groups and vulnerable members</i></p>	<p>Limited involvement of school clubs and management institutions, e.g. school hygiene clubs, mother's clubs, and management committees</p> <p>Outside Oxfam's involvement – mother's clubs (Fadugu primary school) generate funds from seed money to bring in out of school children. Money raised was used to purchase buckets for classrooms during cholera response</p> <p>Out of school children, particularly orphans and children living without primary guardians in urban areas at risk of contamination. Not accessible via house-to-house methods</p> <p>No linkages with women's groups</p>	<p>Schools are critical in response as this is often one place where children can reliably access clean drinking water and soap for hand washing. In particular, school related mother's clubs that have demonstrated success in growing seed money to use to support school can be partners in the response</p> <p>Encourage use of boys and girls children's meetings and volunteerism and leadership, particularly in communities such as Kroo Bay, where strong schools and child-centred institutions are lacking</p> <p>Identify strong community-based organizations that support or are led by women and girls for partnership, especially in rural areas where disease burden and potential for influencing households favours women</p>
MONITORING AND EVALUATION OF RESPONSE		
<p><i>Data collection and monitoring</i></p>	<p>Underreporting of cases by PHUs, especially under-five data</p> <p>No linkages in data reporting between D&V/cholera cases registered at ORT points and PHUs. Deaths occurring before the patient reaches clinics not recorded (Masugbay, Tonkolili District; Kroo Bay)</p> <p>No computerizing of ORT point data; PHU data computerized at Freetown</p>	<p>Create linkages between ORP and PHU surveillance, including computerizing. Basic mobile phone based technology (e.g. epi-data collector) can be used to track outbreaks and deliver timely sex and age-disaggregated data</p> <p>Provide calendars to ORT point volunteers to assist with recording</p> <p>Monitor spikes in under-five cases of D&V</p> <p>Carry out in-depth analyses of the data to validate hypotheses about most vulnerable groups</p>

ASPECT	ISSUES OBSERVED	RECOMMENDATIONS
	<p>ORT point volunteers kept sex and age disaggregated records in all sites (not possible to verify in Segbeya). Volunteers often are not aware of date especially in the transition to new months, which can lead to errors in recording. They also do not specify if patients presented D&V or were precautionary cases that exhibited only one symptom</p> <p>No reporting of under-five D&V cases, despite rapid increase coinciding with outbreak which could signal vulnerability of adults, especially women</p>	<p>Carry out in-depth analyses of the data to validate hypotheses about most vulnerable groups</p>
DEVELOPMENT LINKAGES		
<p><i>Sustainability of behaviour change</i></p>	<p>The origin of vulnerability of most communities is poor access to water and sanitation</p> <p>Good practices were observed that should be shared with other communities, where relevant (e.g. <i>abolo</i> toilets, use of ashes, mechanisms to avoid contamination of water container handles while hand washing, composting systems)</p> <p>Other communities (Segbeya) have particular environmental conditions that will require greater external support (e.g. stone ground difficult for constructing latrines)</p>	<p>Assess behaviour change in the height of the dry season when water is scarce. Recommend use of direct observation of water and sanitation practices in rural and urban contexts</p> <p>Communities, especially ones that have experienced a high burden of disease and death, are ripe for mobilization and can build on experience of volunteerism to initiate CLTS</p>

ASPECT	ISSUES OBSERVED	RECOMMENDATIONS
<p><i>Gender transformative programming</i></p>	<p>No involvement of women's organizations in the planning, implementation, and monitoring stages</p> <p>Cholera prevention and response places a greater workload and burden on women and girls, which can create a barrier to clean water access and sanitation</p> <p>Positive deviants observed - young men in rural and urban areas who support wives with traditionally female-only roles (Rokimbie, Segbeya)</p> <p>Male volunteers demonstrating hygienic practices has unintentionally helped to model adult male involvement in domestic roles</p>	<p>Longer-term engagement with communities that fosters transformation of inequitable gender roles and norms should be taken up</p> <p>Encourage volunteers to play a role in challenging rigid gender roles and social norms that place a disproportionate workload on women and girls. Encourage male volunteers to play an active role in performing household duties in their own homes, regardless of the health status of female relations and/or siblings</p> <p>Publicly recognize model members of the community via households and schools</p>

NOTES

¹ Sierra Leone Ministry of Health data, Dec 2012.

² Girls have achieved parity with boys at the primary education level; over the past two elections, women have increased their representation in Parliament and in Local Councils; rates of female genital mutilation are falling; and the high rate of teenage pregnancy is deemed to be among the country's most significant social problems affecting girls.

³ There is a limited number of possible routes of cholera transmission, deriving from the oral ingestion of faecally contaminated fluids in the midst of a cholera outbreak. Transmission ultimately relates to eating, drinking, and hand washing practices, and other activities involving contact between contaminated hands or other vectors and the mouth.

⁴ Sierra Leone Cholera Prevention Communication Plan 2012-2013.

⁵ With oversight of PHU staff, the team recorded 'D&V' cases in Tonkolili District and Koinadugu District PHUs. Data was recorded starting in the month prior to the peak of cholera cases.

⁶ Reported in Makoba Bana Village, then again in Masugbay Village, in focus group discussions on 27-28 November 2012. Deaths were halted after the DHMT was contacted and sent a response team.

⁷ It has not been possible to test for statistical significance.

⁸ UNICEF, Multiple Cluster Indicator Survey 2011, p.74.

⁹ UNICEF, Multiple Cluster Indicator Survey 2011, p.72.

¹⁰ National Cholera Database 2012, Department for Disease Prevention and Control, MOHS.

¹¹ *Men-pikin*, meaning children who are raised by relatives. Frequently this can lead to exploitation of child labour by adults.

¹² UNICEF Factors contributing to the abandonment of FGC - Draft 2012.

¹³ Derogatory term meaning prostitute.

¹⁴ Preslava Nenova et al., Gender in Agriculture: A Rights Based Approach to Food Security and Sustainable Livelihoods, IFAD/FAO, 2011.

¹⁵ Interview, Health Education Officer, MOHS.

¹⁶ Interview, UNICEF Emergency Coordinator.

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ANNEX 1 ROLES AND ACTIVITIES PROFILE

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission <i>(+ no hand-washing facility or practice)</i>
DOMESTIC (URBAN & RURAL)			
<p><i>Caregiving and domestic role falls to women and girls.</i></p> <p><i>Pre-pubescent boys in Kroo Bay community are less involved in the home.</i></p>	<p>Women, especially mothers, and girls</p>	<p>Fetching water</p> <p>Cooking</p> <p>Eating with hands</p>	<p>Water fetched by women and children and may be drunk at the source. Many do not treat it</p> <p>Tasting food before serving</p> <p>Failing to properly wash raw foods</p> <p>preference by women and girls to eat with hands when eating at home</p>
<p><i>Women and children, especially girls, tend to stay near households during the daytime. Men spend the least amount of time in the household.</i></p> <p><i>In urban areas, single mothers have to juggle child-care with income generation and may lack</i></p>	<p>Single mothers who must carry around toddlers while working</p>	<p>Feeding babies</p> <p>Changing nappies/washing babies</p> <p>Caring for the sick</p>	<p>Tasting baby food when cold and uncovered with same spoon</p> <p>Washing baby bottoms with kula without soap</p> <p>emptying baby “stools” and nappies into latrines, bush and streams</p> <p>Changing baby bottoms while on the move</p> <p>Bathing/washing the sick</p> <p>Cleaning the vomit & stool of the sick</p> <p>Bringing medicine to the sick</p> <p>Cleaning the bedding and clothes of the sick</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
	Pregnant women with lower immunity/girls	Grazing associated with pregnancy	Unusual eating patterns, including night time; unusual tastes
<i>Mend pikin or children who are raised by adults other than their parents. They can often be lured to Freetown with the promise of attending school, but rather are used for child labour, including for the benefit of biological children of the household.</i>	Children, especially mend pikin of both sexes who labour for relatives but do not attend school	Fetching water, boiling water Fetching wood Pre-cooking food Washing pots and pans Running market errands	Drinking water from source Contact with contaminated water Interacting in market, handling fish, money
PRODUCTIVE (URBAN)			
<i>Predominant activity in and around slums, especially among boys</i>	Men, young boys, especially boys without adult supervision	"Black mining"	Scavenging for scrap metals and glass bottles and other object of value. Digging through rubbish in gutters, community rubbish bins, river banks and coast where rubbish washes up/is deposited

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<p><i>Fishing in boats and onshore is a male activity, controlled by men and older male youths, and assisted by boys.</i></p> <p><i>Fish processing, including purchase, resale, smoking, is done by women, with assistance of girls</i></p>	<p>Men, boys</p> <p>Women, girls</p>	<p>Fishing</p> <p>Fish processing, drying, selling (mobile and static)</p>	<p>Casting nets / holding nets in mouth</p> <p>Sharing drinking bottles/containers at sea</p> <p>Eating at sea without washing hands</p> <p>Handling raw fish, bait</p> <p>Handling raw and smoked fish days after pulled from the sea</p> <p>Walking long distances to purchase and sell fish</p>
<p><i>Digging for sand in the sea is done by boys and young men.</i></p>	<p>Men, boys</p>	<p>Collecting and selling sand</p>	<p>Diving into the sea to dig sand, including in parts contaminated with rubbish</p>
<p><i>Maintenance of toilets in urban Freetown and Western Area is an exclusively male activity. Not stigmatized.</i></p> <p><i>Emptying latrine pits is a well paid, one-off job but highly stigmatized; performed only in the dark. Men often get drunk to perform it to cope with stench. Lokko ethnic group known for cleaning latrines.</i></p>	<p>Men, teenage males, Lokko ethnic group</p>	<p>Cleaning and attending toilets</p> <p>Emptying latrine pits</p>	<p>Cleaning toilets by sweeping with water</p> <p>High risk of contamination for those in the pit and in the bucket chain, and for those on site providing support (rum, lighting, payment at end of job)</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<i>Men's club made up of mainly un and underemployed men and adolescent boys takes care of well and surrounding area - charge community members weekly user fees 3-4 months of the year.</i>	Men, young men/adolescent boys (Kissy) Users of wells	Care taking of well	No routine or cholera-specific chlorination of well / unprotected water source
<i>Cobblers are exclusively male</i>	Men and boys	Repairing shoes	Handling worn shoes / soles
<i>Predominant in hillside communities (Kissy)</i>	Out of school boys and girls, women	Cutting and selling wood	Going into the bush, walking long distances, practicing open defecation and drinking from unprotected water sources
<i>Many productive activities, such as male casual labour carrying loads, pushing carts, or mechanics, may not have direct contamination routes, but may expose men more to street food and untreated water. Other occupations may expose men additionally to direct contamination.</i>	Men, boys who apprentice and assist	Casual labourers Skilled trades: Plumbers masons	Eating street food Drinking contaminated water repairing damaged and blocked pipes - handling unclean water
<i>Shared transport vehicles such as taxis and poda podas provide confined and crowded spaces for transmission.</i>	Taxi, poda poda drivers and apprentices	Transporting the sick	Contact with sick passengers Transport of the sick without protecting seats / disinfection afterwards

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<p><i>Street food is predominant in centres of commercial activity and gathering points including schools. It is done by women and girls.</i></p> <p><i>Some food items sold by boys and men in urban areas (e.g. roast red meats, bread, apples, coconuts, water packets).</i></p>	<p>Cookery vendors and their clients</p> <p>Street food vendors and their clients</p> <p>Market sellers</p> <p>Female mobile petty traders who have to carry toddlers on their backs</p>	<p>Selling rice and sauce on street</p> <p>Drinking</p>	<p>Recycling leftover foods containing fish and meats</p> <p>Failing to wash / adequately wash bowls and spoons between clients</p> <p>Washing dishes with unclean water / not allowing dishes to dry before use</p> <p>Recycling leftover foods, including uncooked foods such as fish, raw cucumber lime and fish salads called grund soup</p> <p>Leaving foods uncovered in midst of flies</p> <p>Handling money and food without hand-washing</p> <p>sharing drinking buckets and cups</p> <p>Cleaning baby bottoms while on the move</p>
<p><i>Female hustlers and commercial sex workers whose sole income is sex-work/ girlfriend business. Tend to leave home only in the evenings.</i></p>	<p>Women hustlers and commercial sex workers, especially younger women</p>	<p>Eating leftovers, sharing foods</p> <p>Sharing cigarettes and marijuana</p>	<p>Unpredictable eating places and patterns, food sharing between friends</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<i>Men predominantly, but also women, girls and boys eat on streets because of convenience, and also due to lack of income make economies of scale.</i>	ALL: men, women, boys, girls working on streets and in commercial areas	Eating street food Drinking contaminated water	Cookery with unclean spoon/bowl Uncovered street foods with hands unregulated and untreated water by water companies locally produced "tie water" taken directly from the tap Transferring water packets from seller to buyer Sharing water packets
PRODUCTIVE (RURAL)			
<i>From January to February water is gathering into pools, the start of the dry season.</i>	Men and boys, women and girls Women, girls, boys	Brushing, harvesting rice Fishing in rivers, planting, nursing, transplanting	At any time of year, drinking water directly from the source Handling fish
<i>March is the peak of the dry season. Water scarcity means crops can fail. Male labour gangs that work for wages do not carry sufficient drinking water for all.</i>	Men, male labour gangs	Burning and ploughing, making heaps	In dry season, drinking from stagnant pools of water, such as tree hollows.

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<p><i>May and June, planting rice, no harvest, onset of hungry season.</i></p> <p><i>July and August harvest of groundnuts,</i></p> <p><i>October to December is the time of abundance</i></p>	<p>Women, children</p> <p>Men, women</p> <p>Women, children</p>	<p>Watering, nursing crops, weeding, scaring birds</p> <p>Planting rice crops, nursing</p> <p>harvesting ground nuts, weeding rice crops, bird scaring</p> <p>Large scale rice harvesting</p>	<p>Weeding ground that has been contaminated (e.g. by previous open defecation)</p>
<p><i>Luma markets take place weekly in commercial centres, attracting buyers and sellers from surrounding villages, including traders returning from Freetown.</i></p> <p><i>Traders of hosting communities regularly welcome guests to stay in their homes</i></p> <p><i>Larger commercial centres have a car park where mainly male drivers and mechanics and tradesmen will interact</i></p>	<p>Women especially, girls, boys (as traders and hosts, traders, buyers)</p> <p>Household of Chief</p> <p>Men, drivers, apprentices, okada riders, mechanics, food vendors</p>	<p>Staying with a host household the night before the market</p> <p>Lack of latrines, hand washing facilities at market</p> <p>Hosting guests</p>	<p>Sleeping in crowded conditions</p> <p>Sharing drinking buckets and cups</p> <p>Sharing meals, eating from the same bowl with hands (women)</p> <p>Sharing latrines without soap</p> <p>Handling money</p> <p>Handling fish without cold storage</p> <p>Eating uncovered or contaminated food</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<p><i>Gold mining is less demanding of physical strength than diamond mining and provides small but reliable income. Many women are engaged in gold mining because it enables them to keep a family. Children frequently miss school to earn their own money and to help their families. Attracts permanent and seasonal workers.</i></p> <p><i>In Segbeya, water in the mining area flows is fed by a stream that is used for washing, laundering and defecation.</i></p>	<p>Women, men boys, girls</p> <p>Children under 5, on site near their parents</p>	<p>Digging, carrying and washing gravel</p> <p>Drinking on site</p> <p>Eating on site</p> <p>Handling and feeding children</p>	<p>Standing in water that could get contaminated, using hands in this water to wash gravel</p> <p>Sharing drinking containers with untreated water</p> <p>Eating food on site without stopping for hand washing (with hands)</p> <p>Feeding children on site without hand washing</p>
COMMUNITY			
<p><i>Difference in government schools and private schools where students pay fees for</i></p>	<p>School girls and boys</p>	<p>Eating street food sold at school</p> <p>Cleaning school latrines</p> <p>Playing in school yard</p> <p>Drinking at school</p>	<p>untreated water and juices uncovered / cool foods</p> <p>inadequately washed salads</p> <p>use of hands</p> <p>assigned by head teacher</p> <p>interacting with other children, playing in dirt</p> <p>sharing drinking cups/buckets</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<p><i>Boys tend to be unsupervised, even in hazardous areas</i></p> <p><i>Boys more often expected to make their living without assistance</i></p> <p><i>Gambling is highly prevalent among men, starting from a young age.</i></p>	<p>Boys, especially out of school boys living without parental care/primary guardians (Kroo Bay)</p>	<p>Swimming in the "gutter"</p> <p>Drinking from water sources</p>	<p>Swimming and playing in the water and with empty boats</p> <p>Drinking water from unprotected sources</p>
<p><i>Disabled individuals with reduced mobility/ facilities / accessible infrastructure/find spaces in community to reduce movement. Depend on children to support water access and hygiene practices.</i></p>	<p>Physically disabled individuals</p>	<p>Assisted fetching and cleaning of drinking water</p> <p>Assisted toilet practices</p>	<p>Rely on hygiene practices of those who assist them. Constrained ability to wash hands, access clean water packets, toilet at will.</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<p><i>Mentally ill often lack support networks, suffer from stigma.</i></p> <p><i>Unlike schools in the area, psychiatric hospital is seen as an entity divorced from the community. Poor sanitation, hygiene practices. Patients dependant on staff for water access and hygiene, including bathing. Water pump and bausers.</i></p>	<p>Mentally ill</p> <p>Psychiatric hospital patients, especially restrained patients, staff (Kissy Mental Hospital)</p> <p>Surrounding community, e.g. street food vendors (Kissy)</p>	<p>Eating from rubbish piles, ground</p> <p>Providing drinking water to restrained patients</p> <p>Cleaning stool buckets of restrained patients</p> <p>Washing patients</p> <p>Interaction with mentally ill</p>	<p>Eating from rubbish piles often highly mobile, covering long distances on foot daily</p> <p>No hygienic practices for cleaning drinking water</p> <p>Toilets patients can access are blocked and spilling over with faeces</p> <p>No hand washing facilities</p> <p>Patients bathed on a 3-4 day cycle, depending on water supply</p> <p>Patients regularly escape confines of hospital to walk around town, some returning daily</p>
<p><i>Under and unemployed men and youth spend times in male gathering points such as attaya and cookery bafas, ghettos, film houses and football fields.</i></p>	<p>Under/un-employed men and male youth</p>	<p>Sharing drinking cups</p> <p>Sharing cigarettes and marijuana</p> <p>Food sharing</p>	<p>A single cup serves many men without washing, open drinking buckets</p> <p>Passing round cigarettes</p> <p>Taking turns, or pooling money to buy a plate of rice that is shared</p>

Social, Cultural, Economic factors	Exposed group	Activity/ task/practice	Context of transmission (+ no hand-washing facility or practice)
<i>Ablution performed before prayer</i>	Muslim men, women, children	Ablution	Use of Kula to perform ablution - often one-handed, handle can be contaminated
<p><i>Funeral rites performed in the midst of a cholera outbreak</i></p> <p><i>Muslim burials tend to take place on the same day, often within hours. Christian burials take days, to ensure distant relations are able to attend.</i></p> <p><i>Muslims bury the dead in white satin, Christians use coffins.</i></p> <p><i>Burial takes place in cemeteries.</i></p> <p><i>High ranking Chiefs have ethnically-specific ceremonial funeral traditions in the secret bush.</i></p>	<p>Elders, same sex as the dead</p> <p>Female relations of the dead, sympathisers</p> <p>Christians, funeral homes</p> <p>Muslim, Christians sympathisers, religious leaders</p> <p>Male relations and friends</p> <p>Men</p>	<p>Washing the body</p> <p>Preparing food for visitors</p> <p>Keeping the body in the home</p> <p>Prayer over the body</p> <p>Funeral procession</p> <p>Burial</p>	<p>Ceremonial washing the body of the sick who have died from cholera</p> <p>Visitations by sympathisers</p> <p>Sharing of food, depending on socio-economic status</p> <p>Temporary storing of body in the home</p> <p>Ceremony, held in home, mosque or church</p> <p>Prayer over the body of prayerful individuals at the Mosque or Church. Only for those with strong ties to the religious community.</p> <p>Carrying the body</p> <p>Burying the body</p>

ANNEX 2 KEY INFORMANTS

Helene Juillard, Cholera Coordinator, Oxfam

Marc Escudier, Cholera WASH Programme Manager, Action Contre La Faim

Roland Conteh, National Surveillance Officer, Ministry of Health and Sanitation

Samuel Sesay, Health Education Officer, Health Education Division, MOHS

Lansana Conteh, Deputy Program Manager, Health Education Division, MOHS

Moira Fratta, Emergency Coordinator, UNICEF

Gaurav Garg, Communication for Development Specialist, UNICEF

Helen Tirebuck, Programme Manager, Freetown, Oxfam

Pamela Palma, Programme Manager, Tonkolili District, Oxfam

Hannah Mekonnen, Public Health Promoter Team Leader

Humphrey Marangu, Public Health Engineer Team Leader, Tonkolili District, Oxfam

Beth Megnassan, Public Health Team Leader, Koinadugu District, Oxfam

Umaru Jalloh, Deputy Chief Administrator, Koinadugu District Council

M. S. Dumbuya, Monitoring and Evaluation Officer, MOHS, Koinadugu District

Bai Kamara, District Superintendant MOHS, Koinadugu District

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