

Ebola in West Africa

Impact on Health Systems



Need for international assistance	Not required	Low	Moderate	Significant	Urgent
				X	
Expected impact	Insignificant	Minor	Moderate	Significant	Major
				X	

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Crisis Overview

- The reported cumulative number of Ebola cases across Guinea, Liberia and Sierra Leone is 23,694, including 9,589 deaths as of 22 February, making it the largest EVD outbreak ever recorded. Incidence has been stabilising in all three countries since January 2015, and the response is moving towards early recovery.
- The large number of Ebola virus disease (EVD) cases has overwhelmed the weak and under-resourced health systems in the three most affected countries. Scarce resources have been diverted to the Ebola response, and health facilities have been temporarily closed or reduced operations.
- The lack of monitoring and surveillance for diseases other than Ebola has led to big gaps in information. Little information is available on other health problems, including potential disease outbreaks, access to treatment for HIV/AIDS or tuberculosis, the burden of malaria, and access to maternal health services, immunisations and medication.

- Fear of contracting EVD and mistrust of the health system has made people reluctant to seek treatment from health facilities, further impacting the health sector and increasing the risk of mortality and morbidity from otherwise treatable diseases.

Key Findings

Anticipated scope and scale

- EVD transmission has stabilised, but continued treatment efforts are required stop all transmission.
- Decreased availability and utilisation of health services are expected to increase the burden of morbidity and mortality of diseases other than Ebola, as the sick are not being treated.

Priorities for humanitarian intervention in the health sector

- A scale-up of health facilities' functionality is needed to ensure access to essential health services, especially for maternal and child health services.
- Monitoring and surveillance of diseases other than Ebola is required in all three most affected countries. Very few cases of diseases like measles, Lassa fever, meningitis and yellow fever are being reported, increasing the possibility of an outbreak going undetected.
- Trust in the health system needs to be restored, as fear of Ebola and association of health facilities with increased risk of contracting the disease are preventing people from seeking health care.
- Mental health needs to be addressed as the population is struggling with grief and complex psychological needs, and the health systems of the affected countries are not equipped to deal with the number of people seeking psychological support.

Humanitarian constraints and response gaps

- The rainy season is expected to start in April/May. As roads may become inaccessible and bridges are washed out, access may become an issue.
- Community resistance to the response, especially in certain prefectures in Guinea, is posing difficulties to reach the affected population.
- Weak health systems in all three countries, unequal distribution of scarce resources, and a lack of training diminish local response capacities.

Crisis Impact on Health Systems

Regional

Morbidity and mortality

- **Malaria** is the top cause of morbidity in health facilities (30-40% of diagnoses) and associated with thousands of deaths per year in the region (WHO, 10/12/2014). Malaria-related mortality was projected to increase sharply as patients were afraid to approach health facilities for fear of contracting Ebola, and were therefore not getting treatment (international media, 26/09/2014). The implementation of several antimalarial drug administration campaigns, especially widespread in Sierra Leone, might have limited the increase.
- **Potential infectious disease outbreaks:** Monitoring and surveillance of diseases other than Ebola have been severely affected by the epidemic. Very few cases of diseases such as measles, meningitis, and yellow fever are being reported. The lack of detection of potential outbreaks, suspension of vaccination campaigns and falling vaccination rates in all three countries, as well as a decrease in services provided at health facilities could significantly increase morbidity and mortality related to preventable and treatable diseases.
- **Lassa fever:** The peak season for Lassa fever in West Africa runs from November to April. Every year between 100,000 and 300,000 people are infected in the region, and an estimated 5,000 die (CDC, 04/04/2014). Rapid tests are not widely available and without them only a laboratory test can tell the difference between an Ebola and a Lassa patient. The disease has been largely forgotten in the current Ebola virus outbreak, which has taken up most resources, and health care workers (HCWs) have warned they might not be able to deal with Lassa fever if cases increase (international media, 03/11/2014).
- **Cholera:** Increased attention to hygiene and improved practices due to awareness-raising in relation to Ebola may have decreased the risk of cholera in affected countries (UNDP, 23/12/2014).
- **Maternal health:** In October, up to 800,000 women across Guinea, Liberia and Sierra Leone were expected to give birth in the coming year (international media, 16/10/2014). Decreased availability of and access to maternal health services is likely to increase rates of maternal mortality, which are already among the world's highest (UNDP, 12/2014).
- **HIV/AIDS:** Before the epidemic, more than 40,000 people were estimated to receive antiretroviral treatment (ART) (WHO, 10/12/2014). Though this already was only a proportion of the number of people estimated to be living with HIV, it was reported

in November that 80% of people living with HIV have not been able to access treatment (UNDP, 14/11/2014). Decreased use and availability of health services may facilitate the spread of HIV (UNDP, 23/12/2014).

Regional HIV treatment

42,000 people are on ARV therapy in the three countries, of whom 80% have been unable to access their treatment

- **Tuberculosis (TB):** National resources planned for TB have been reallocated to Ebola containment. This potentially impacted the testing of new suspected cases and reduced access to treatment. In 2013, there were 55,000 new and relapse TB cases in Guinea, Liberia, and Sierra Leone (WHO, 10/12/2014).
- **Nutrition:** There are concerns that severe acute malnutrition in children under five will increase. The impact of the outbreak on livelihoods and incomes means parents are struggling to earn money for adequate food (UNMEER, 03/11/2014). A steep decline in the use of health services, combined with increases in prices and loss of livelihoods will likely halt the progress made in reducing the number of underweight infants (UNDP, 23/12/2014).
- **Ebola long-term effects:** Across the region, there are reports of long-term health effects among EVD survivors. Though statistics seem to change according to location and no conclusive information is available, the main problems reported include issues with vision, joint pain, and mental effects, such as sleeping problems and flashbacks.
- **Mental health:** Consequences of the epidemic, including containment measures and the loss of large numbers of family and friends, has led to complex psychological needs among the population. Normal reactions to upsetting situations are exacerbated by reduced access to support systems in the community and coping strategies.

Health service delivery

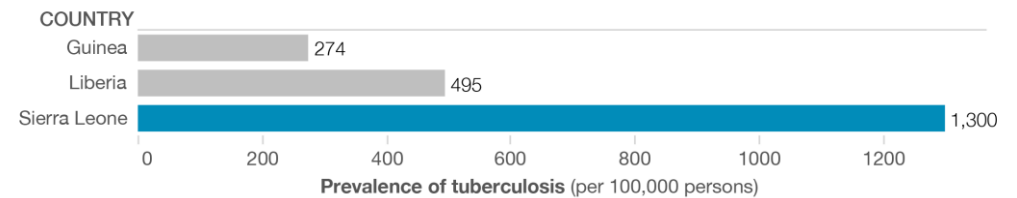
- **Health facilities:** Although health facilities have started reopening, many were temporarily closed at some point during the outbreak, limiting the availability of non-Ebola related health services (UNDP, 14/11/2014). Open health facilities are operating at reduced levels. Infection control (IPC) supplies, medication and other resources are all limited.
- **Health personnel:** Human resources for health, already scarce and unevenly distributed in the region, have been greatly impacted. As of 18 February, 833 HCWs

have been reported infected, 488 of whom have died (WHO, 18/02/2015). Many HCWs, who are at high risk of contracting the virus, have stopped reporting to work (UNDP, 14/11/2014). Strikes have been reported over HCWs not receiving salaries for several months, or not being paid risk allowances. Other HCWs have been reallocated to activities EVD-related activities.

- **Utilisation of health services:** Patients suffering from non-Ebola conditions are avoiding professional healthcare due to fear of Ebola and mistrust of the health system, putting them at risk of harm, even death, from common preventable diseases. Facilities that are open are reporting decreases in the number of consultations and admissions. Reliance on other forms of healthcare, including traditional healers and self-medication, is rising (UNDP, 14/11/2014; WHO, 13/11/2014; UNDP, 23/12/2014).
- **Immunisation:** Although there is a lack of reliable statistics, the number of children receiving routine vaccinations in 2014 seems largely reduced. Mass vaccination campaigns were postponed to avoid public gatherings in the midst of the EVD outbreak. Since December 2014, some immunisation activities have taken place, especially for measles, to increase vaccination coverage in the most affected countries. In early 2015, cases of measles have been reported in Guinea, Liberia and Sierra Leone.
- **Polio:** Many staff working in polio eradication programmes have been transferred to Ebola duties. Polio vaccination in Ebola-infected countries has been postponed. Living conditions have worsened, with a particular impact on sanitation, increasing the likelihood of polio resurging and transmitting, which will probably remain undetected (Global Polio Eradication Initiative, 02/10/2014).
- **Maternal health:** The countries worst affected by Ebola are expected to report higher maternal mortality rates than before the outbreak, as lack of routine obstetric care will have a significant negative impact on maternal and newborn outcomes (WHO, 12/11/2014). Women are reluctant to use maternal and reproductive health services, including antenatal care (ANC). In November, women were reported to have stopped giving birth in health facilities. There are signs of pregnant women being denied care, due to the high risk of EVD infection associated with deliveries. Contraceptive distributions have dropped by 70%, leading to fears of a high rate of teenage pregnancies (UNMEER, 03/11/2014).
- **HIV/AIDS and TB:** No recent information on HIV/AIDS services is available. In October, it was reported that routine HIV and TB services, including community-based and faith-based activities, were compromised, leaving people living with HIV or TB increasingly vulnerable (IATT, 20/10/2014).

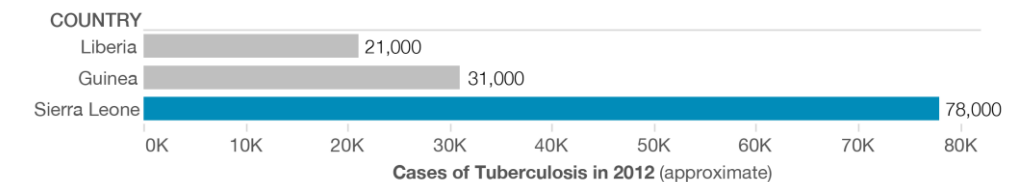
Tuberculosis prevalence

WHO 2012



Total tuberculosis cases

WHO 2012



Guinea

Morbidity and mortality

- **Malaria** is expected to be of great concern with the upcoming rainy season (personal interview (PI), 12/02/2015). The recent achievement of reducing the malaria mortality rate by 50% is being eroded by Ebola (international media, 14/11/2014). WHO figures from Gueckedou show that of people coming to health facilities with fever in October, 24% of those testing positive for Ebola also tested positive for malaria, and 33% of those who tested negative for Ebola, tested positive for malaria – an indication of the great malaria burden (international media, 28/12/2014).
- **Measles:** Measles was expected to become a more of a problem in March-May 2015. Increasing measles vaccination coverage has been pointed out as one of the priority health interventions (PI, 12/02/2015). An outbreak has been confirmed in Gaoual, Boke region, in February 2015 (UNICEF, 18/02/2015). In February 2014, a mass vaccination campaign in Conakry in response to a measles outbreak reached almost 400,000 children (MSF, 10/02/2014). There is a need to monitor vaccination rates, as it is unclear to what extent immunisation programmes have been impacted by the EVD outbreak (PI, 06/02/2015).
- **Cholera:** Though cholera is endemic and conditions for water-borne diseases were favourable given abundant rainfall, no cholera cases were reported in 2014. This may be due to improvements in hygiene conditions resulting from measures to contain the spread of Ebola (UNDP, 23/12/2014). However, lack of monitoring may also play a role. In 2012, a mass cholera vaccination campaign took place, but

effectiveness of the vaccine decreases substantially after the first six months (PI, 10/02/2015; WHO 13/11/2010).

- **HIV/AIDS:** 130,000 people are estimated to live with HIV. 27,800 were receiving ART prior to the EVD outbreak, and about 75% of them were in Conakry (UNAIDS, 31/10/2014). It is unclear whether these people still have access to treatment.
- **Nutrition:** Malnutrition is of great concern, especially in rural areas, with global acute malnutrition levels reaching close to the emergency threshold in some areas, but there is a lack of nutrition surveillance since the onset of the EVD outbreak. (PI, 12/02/2015; PI, 12/02/2015; DHS, 2012).

Health service delivery

- **Health service availability:** The weak health system has collapsed (UNMEER, 09/02/2015). Preliminary findings from a joint evaluation of health districts noted 94 health facilities were closed in Coyah, Matou, Beyla, Lola, Macenta, Nzerekore and Yomou (PI, 06/02/2015). Nationwide, this corresponds to around 6% of health facilities closed in November 2014, due to HCWs failing to report to work out of fear of EVD and HCWs who died of the virus (PI, 06/02/2015). The private sector, sometimes preferred over the public sector prior to the outbreak, has also been affected. Reports of private practices being linked to cases of contamination have led to the desertion of the private sector in some places, though no data is available to document this (PI, 12/02/2015). Still, it is thought that private practices, including private clinics and health professionals informally operating in their home or transporting patients in cars at very low hygiene standards, remain popular in the much of the country. The mobilisation of all resources for Ebola in both affected and in still unaffected regions has meant the neglect of other activities, especially immunisation and anti-malaria activities (PI, 13/02/2015). The Ministry of Health has started an evaluation of health facilities in early 2015 (PI, 12/02/2015). WHO has conducted localised surveys in Nzerekore and Lola prefectures to evaluate functionality the health system. Preliminary findings show that routine health activities have been severely affected. Management of malaria has decreased, children under one year of age have not received vaccinations, and consultations have decreased dramatically (PI, 10/02/2015). In Macenta, all programmes planned for 2014 (child nutrition, reproductive health, malaria) have been interrupted (PI, 12/02/2015).

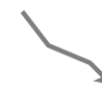
Fear of health services



32% of respondents in areas where the outbreak had been contained, and 49% of respondents in areas that were still affected by Ebola thought it **dangerous to attend health facilities**

- **Personnel:** 167 Ebola cases were confirmed among HCWs, including 88 deaths (WHO, 18/02/2015). An estimated 75-85% of HCWs are in Conakry, therefore the impact of EVD on HCWs at the national level will not be significant. However, at health centre level, a reduction in already scarce HCWs can have a major impact (PI, 06/02/2015). The loss of medical staff to the EVD crisis points to a pre-existing need for training, especially in terms of hygiene practices (PI, 10/02/2015). The director of Macenta hospital died of Ebola. The director of the hospital in Nzerekore and the regional director of health have been killed by violence resulting from resistance to the Ebola response (PI, 06/02/2015). In Macenta, hospitals used to use interns and volunteers. Since the Ebola outbreak, they have been asked to stop coming to the facilities to avoid risk of infection (PI, 12/02/2015).
- **Monitoring/surveillance:** The EVD outbreak has paralysed the monitoring system. No consolidated information is available from June 2014 onward. The collection and analysis of monthly data and biannual and annual monitoring have been impeded (PI, 12/02/2015). In Lola prefecture, routine monitoring took place January–June 2014, but was suspended July–December (PI, 13/02/2015). The collection of information at higher levels is interrupted, which means that though it may exist, at least six months of epidemiological data is not available (PI, 10/02/2015). In some prefectures, international responders have also started collecting data about health facilities; however, the process was halted in Lola due to the recent flare-up of EVD cases (PI, 15/02/2015).

Utilisation of health services



In 2014, utilisation of consultations and hospitalisations decreased by ~50% compared to 2013

- **Utilisation of health services:** A lack of trust is leading to decreased utilisation of health services (PI, 12/02/2015). In 2014, consultations and hospitalisations decreased by about 50% compared to 2013 (PI, 06/02/2015). People have lost confidence in health staff and are afraid to come to hospitals. This is partially a social problem, as attitudes of patients towards HCWs, and vice versa, have changed. The contact between HCWs and the population has ruptured, due to rumours such as Ebola being intentionally imported by the government for financial gain, and because of patients' and HCWs' fear of contracting EVD in health facilities (PI, 13/02/2015). People are increasingly turning to traditional healers when seeking healthcare (UNDP, 23/12/2014). Self-medication is reportedly on the rise, and people are waiting until they are very sick before going to a health facility (PI, 12/02/2015). Attendance at health facilities fell sharply in August 2014 compared to August 2013. Primary medical consultations dropped by 58%, hospitalisations by 54%, and vaccinations by 30% (UNDP, 19/12/2014). In Nzerekore, the number of consultations has dropped by 30-60%, even in areas that have not reported any EVD cases (PI, 10/02/2015). According

to a UNICEF survey in November, 32% of respondents in areas where the outbreak had been contained, and 49% of respondents in areas that were still affected by Ebola, thought it dangerous to attend health facilities (UNDP, 19/12/2014).

- **Immunisation:** Though statistics are hard to obtain, one programme has registered a large reduction in the number of children being vaccinated since the beginning of the outbreak (PI, 06/02/2015). An estimated 400,000 children were due for routine vaccinations in 2014 but the Ebola crisis led to a 50% reduction in the number vaccinated. An intensification campaign of routine vaccinations between 27 November and 3 December covered the 20 districts that had no Ebola cases or had been declared Ebola-free (UNICEF, 17/12/2014). Some vaccination campaigns have been postponed to avoid public gatherings, including those against polio and meningitis, and part of the funding and logistical resources for vaccination programmes have been redirected to the Ebola response. As a result, vaccination coverage is likely declining (UNDP, 23/12/2014). Coverage of the third dose of DTP vaccination decreased by 25% between August 2013 and 2014 (PI, 06/02/2015). Resistance to the Ebola response is posing a risk to vaccination campaigns, even in areas that have not seen any Ebola cases. There is a risk that any Ebola cases after a vaccination campaign will be blamed on the campaign (PI, 12/02/2015).

Immunisations



There has been an almost **50%** reduction in the number of children vaccinated

- **Malaria:** The number of reported malaria cases in 2014 dropped by 40%. The decrease is likely the result of people being too scared to go to health facilities and a lack of reporting (international media, 29/12/2014). A reduction in home support for malaria by community health workers and reduced attendance at clinics could lead to an increase in malaria-related morbidity and mortality. Since 2012, Guinea has adopted WHO guidelines to confirm every case with a rapid diagnostic test (RDT) or laboratory test before treatment, rather than systematically treating suspected cases. However, blood samples are no longer taken since the EVD outbreak, because of risk of contamination (PI, 06/02/2015). In Gueckedou, some doctors have stopped doing RDTs for malaria (international media, 29/12/2014). Some community workers have left malaria control programmes to work with non-governmental organisations (NGOs) dealing with the Ebola epidemic. Others are reluctant to come to work because of fear of contracting Ebola (UNDP, 23/12/2014). A joint study is being conducted on the impact of EVD on malaria treatment (PI, 06/02/2015). In Nzerekore, visits to several health facilities revealed malaria indicators had deteriorated, though all had medication in stock (PI, 12/02/2015).

Malaria caseload and treatment



The number of reported malaria cases dropped by **40%**, likely due to fear of health facilities

- **Maternal health:** Women are facing increasing risks from pregnancy and childbirth, as attendance at reproductive health services has declined (PI, 06/02/2015). Of the approximately 200,000 pregnancies that were expected in the last quarter of 2014, an estimated 40,000 pregnant women may not have been monitored and may not have had their babies delivered by a skilled birth attendant (UNDP, 23/12/2014). In August 2014, a 16% drop in caesarean sections and an 11% drop in institutional deliveries were recorded compared to August 2013 (WHO, 10/12/2014). ANC consultations declined by 10–25% and the number of births attended by skilled health personnel decreased by 7–20% (UNDP, 23/12/2014; PI, 06/02/2015). Although some sources indicate that midwifery has been largely interrupted, others report that midwives have continued their work in spite of the Ebola outbreak, even if they are highly exposed to the disease. Some midwives perform deliveries in their homes. The reported practice of taking the placenta home for burial after delivery poses an additional risk (PI, 12/02/2015). The capacities for maternal health are extremely weak. As of February 2015, there is only one gynaecologist in Lola prefecture, which had a population of over 200,000 people in 2011 (PI, 10/02/2015; Institut National de la Statistique, 2012).
- **HIV/AIDS:** No statistics are available, but there is anecdotal evidence of stock ruptures in antiretrovirals in certain regions because staff capacity was overwhelmed by EVD (PI, 06/02/2015). Resources have been redirected to the EVD outbreak. HIV prevalence may increase because of poorer HIV monitoring, an up to 90% reduction in HIV screening, and reduced prevention of mother-to-child transmission. People are reluctant to come to facilities providing these services and community awareness-raising campaigns on the prevention of HIV/AIDS transmission have slowed (UNDP, 23/12/2014).
- **Tuberculosis:** Resources planned for TB services have been reallocated to the EVD outbreak. The reduced use of outpatient services has halved the number of suspected TB cases reported in Forest Guinea and it has become more difficult to obtain TB medication (UNDP, 23/12/2014).
- **Expenditure:** Routine health service expenditure has suffered, as in September only half of the amount planned was spent. Cost recovery dropped due to the decrease in use of health services and some donor funding for the health sector has been redirected to contain the epidemic (UNDP, 23/12/2014).

Liberia

Morbidity and mortality

- **Malaria:** In 2013 malaria accounted for about 35% of outpatient department attendance and 33% of inpatient deaths. RDTs and artemisinin-based combination therapy (ACT) were available at no cost (PMI, 01/01/2014). Although anecdotal information indicates medication is not available at health facilities, the limited surveillance in place before the EVD crisis has stopped, so there is no systematic reporting on malaria case numbers or the availability of medication.

Malaria



In 2013 malaria accounted for about **35%** of outpatient department attendance and **33%** of inpatient deaths

- **Measles:** Since September new cases of measles have been reported, most of them in children 9–59 months, followed by children of 5–9 years, and some cases in children under nine months (MoH, 30/01/2015). A measles outbreak was reported in Lofa county, with three confirmed cases as of 13 December 2014, and suspected cases were still reported in February 2015 in Montserrado, Lofa and Marghibi counties (UNICEF 17/12/2014; 11/02/2015; international media, 23/10/2014). Since surveillance has been completely interrupted, no recent information is available on the number of cases and where outbreaks are. In Monrovia, an investigation for measles cases is being conducted, based on reports of suspected cases, but no outbreak had been confirmed as of 21 February (PI, 21/02/2015).
- **Lassa fever:** The disease is endemic and is reportedly present in the country, but no flare-ups are known (PI, 21/02/2015).
- **Yellow fever:** At least one case of yellow fever has been reported (IMS, 30/01/2015). Other sources report no confirmed cases to date, though no yellow fever labs are available in Liberia, so laboratory confirmation is not possible (PI, 21/02/2015).
- **Pertussis (whooping cough):** As of February 2015, an outbreak was reported in Maryland county. Though this appears to be a sign of the low vaccination coverage before the EVD epidemic, caution is required due to the limited health service information currently available (MoH, 21/02/2015).
- **HIV/AIDS:** Before the Ebola outbreak, more than 70% of approximately 30,000 HIV patients had access to treatment. 144 HIV/AIDS care centres were operational, but by November, 60% of them had closed due to a shortage of health workers and fear of Ebola transmission. There is a risk of an increase in the number of HIV cases if health facilities remain non-functional, as new HIV-positive patients might not be

identified and this could lead to further transmission of the virus (IRIN, 21/11/2014; UNAIDS, 31/10/2014).

HIV centre closures



60% of HIV/AIDS care centres were closed by November due to fear of Ebola transmission and a shortage of healthcare workers

- **Nutrition:** An estimated 52,000 children under five in Liberia are at risk of severe acute malnutrition. A rapid nutrition assessment is planned for early March (Nutrition cluster, 27/01/2015).
- **Ebola long-term effects:** Though statistics are somewhat contradictory, a substantial portion of Ebola survivors have developed long-term problems (All Africa, 22/12/2014). 24.5% of survivors are reporting pain in the body, 7.6% have eye problems and 4.7% reported extreme fatigue (IMS, 07/01/2015). As of 21 February, eight health facilities that are providing clinical services to EVD-survivors (IMS, 21/02/2015).

Health service delivery

- **Health facilities:** In several counties, most health facilities have closed at some point during the outbreak. People have been refused entry from HCWs' fear of contracting EVD (IMS, 23/01/2015). Preliminary findings of a first round of comprehensive, nationwide monitoring of health facilities indicate that nearly all facilities are open, but with varied levels of services. Most facilities are providing reduced services, compared to before the Ebola outbreak (PI, 19/02/2015). The following provide mere snapshots of the impact of EVD on the health sector at a given time. Between July and September 2014, the closure of health facilities, especially in counties hardest hit by the EVD crisis, accounted for most of the large drop in reported delivery of health services. In August 2014, only one-third of medical services were available compared to May-June 2014, as 62% of health facilities were closed (WHO, 10/12/2014; MoH, 24/01/2015). By late December, a large number of facilities were reported open, but only 27% of facilities reported having triage (UNMEER, 29/12/2014). As of 5 November, 46% of health facilities were open but most had reduced hours, staff and services. Many of the referral hospitals had to suspend regular operations as the EVD outbreak surged, and it took several months to resume day-to-day activities (HRH, 12/2014). The reduction in operations was largely due to a lack of personal protective equipment (PPE) supplies (UNMEER, 23/11/2014). Gaps in infection prevention and control (IPC) and essential service delivery were still reported in January and there is a need to rapidly scale up IPC efforts as health facilities re-open (UNMEER, 11/01/2015).
- **Medication/supplies:** Data on consumption and utilisation of medication and supplies is very limited (UNMEER, 11/01/2015; 25/01/2015). Over July–September,

shortages were a problem and distribution systems were constrained (MoH, 24/01/2015). These challenges persist. HCWs reported a lack of essential drugs and challenges because of poor transportation and communication networks (CDC, 19/12/2014). Shortages of essential drugs have been reported in a hospital and in county pharmacies in Maryland county (PI, 10/01/2015). In a rapid assessment of local health facilities and EVD response capacities, the Rivercess County Health Officer noted a number of challenges, including a lack of basic medical supplies, in the Cestos City county hospital, which is the primary care giver in the area (UNMEER, 21/01/2015). In October, the Phebe referral hospital in Suakoko, Bong county, was reported to be in need of laboratory equipment and experienced a shortage of drugs due to a lack of funds and the unavailability of certain drugs from the National Drug Service and private suppliers (international media, 26/10/2014).

- **Personnel:** No organised strikes have been reported recently, but HCWs sometimes do not come to work because of lack of payment. High risks associated with testing and treating Ebola patients due to limited availability of protective equipment have prompted many health workers to leave their jobs. Low wages and a lack of payment of promised risk allowances have further discouraged commitment (UNDP, 23/12/2014). Routine healthcare workers have not been paid since September (IMS cash payments presentation, 30/01/2015). The deaths of HCWs have severely impacted capacity (IMS, 23/01/2015). As of 16 February, 372 EVD cases, including 179 deaths, had been reported among HCWs (MoH, 16/02/2015; WHO, 18/02/2015). The unprecedented number of HCWs infected has eroded public confidence (MoH, 14/02/2015).
- **Utilisation of health services:** As of September 2014, patients were afraid to seek care and resorting to alternative means. Utilisation rate as measured by number of curative consultations per capita decreased dramatically, from 0.8 between April and June to 0.4 between July and September. Because monitoring in health facilities has been interrupted, no recent countrywide information is available on the utilisation of health services and the impact of the EVD outbreak. Grand Kru reported the highest utilisation and Grand Cape Mount and Montserrado the lowest (MoH, 24/01/2015). As of January 2015, health facilities were open in Maryland county, but people were not coming to the clinics. At the peak of the EVD outbreak, the number of patients in clinics had decreased by half (PI, 10/01/2015).
- **Monitoring/surveillance:** When EVD hit, all surveillance for other diseases stopped, including the early steps of the International Health Regulations (IHR) surveillance protocols that were being adopted. The current surveillance system is only focusing on EVD. There is a need to restart surveillance of other infectious diseases, including measles, yellow fever, and Lassa fever (IMS, 30/01/2015). As many HCWs were afraid to work in their health facility, routine and active surveillance was affected and no accurate information was generated from health facilities and

communities. In many cases, reports were not collected from health facilities, and counties were not submitting timely information about essential health services to the Health Management Information System. This is exacerbating the downward trend in the reported utilisation of health services (MoH, 24/01/2015). In Maryland county, and others with recent EVD cases, patients presenting with Ebola-like symptoms are often not given diagnostic tests, illustrating the gap in surveillance for non-EVD diseases (PI, 10/01/2015).

- **Immunisation:** Since May 2014, the number of children being vaccinated with pentavalent and measles vaccines has decreased dramatically. After being fairly stable throughout the first months of 2014, with around 10,000 children vaccinated per month, fewer than 4,000 children received their vaccinations in November. The lowest vaccination coverage between January and December 2014 was reported in River Gee county (close to 40%), followed by Grand Cape Mount, Margibi and Montserrado counties (45–50%). National coverage over the same period was reported as 56% for the first dose of measles and 61% for the third dose of pentavalent vaccine (MoH, 24/01/2015). July–September, the overall number of child immunisations dropped by 26% compared to the same period in 2013 (WHO, 10/12/2014). Countrywide Penta 3 coverage was 43% in July–September, compared to 86% in July 2013–June 2014 (MoH, 24/01/2015). In Clara Town, one of Monrovia’s suburbs, coverage for routine vaccinations among children under one dropped to 27%, from 97% before the EVD outbreak (international media, 23/10/2014). A mass vaccination campaign was not recommended in response to the Lofa county measles outbreak, given the Ebola context. Instead, a periodic intensification of routine immunization (PIRI) was implemented to administer vitamin A, a supplemental dose of measles vaccine to children 9–59 months, and other routine immunisations to under-ones who had missed theirs (UNICEF, 17/12/2014; UNICEF, 07/01/2015; UNMEER, 03/02/2015). The second round of PIRI reached 166,985 children under five, including 27,661 under one, corresponding to about 30% of the target, compared to 20% in the first round. The timing of the vaccinations is believed to have severely limited the reach of round two, given the EVD vaccine trial that started the same day, which led to some misconceptions (MoH, 21/02/2015). In Karquepo, Sinoe county, some families refused to vaccinate their children because of the proximity of the hospital to a Community Care Centre (CCC) and its association with EVD (UNMEER, 02/01/2015).
- **Malaria:** MSF conducted a mass drug administration campaign against malaria for people over six months in Monrovia, reaching about 300,000 people (WHO, 13/11/2014). Normally, pregnant women receive two doses of preventative malaria treatment. Coverage of the second dose decreased to 22% in July-September 2014 from 47% in the preceding three months (MoH, 24/01/2015).

- **Maternal health:** Between May and July 2014 the number of women attending reproductive health clinics fell by 25%, resulting in expectations of drastic increases in maternal and infant mortality and unwanted pregnancies (international media, 10/10/2014). National skilled delivery coverage decreased from 56% April–June 2014 to 28% July–September. There had been an increasing trend in early 2014, which was reversed by the interruption of services during the EVD outbreak. Pregnant women have reportedly been denied services because HCWs were afraid to provide care, given the high exposure to body fluids in deliveries and the associated risk of Ebola. As a result, most women were delivering at home (MoH, 24/01/2015). Doctors are charging very high fees for deliveries. This is not a new phenomenon, but the sum has increased, linked to the associated risk of a potential Ebola-positive birth (IRIN, 08/10/2014).

Maternal Health

National skilled delivery coverage fell by **56%**
in April - June to **28%** in July-September

- **Nutrition:** The EVD outbreak has disrupted nutrition treatment services. No nutrition assessment has been done since the start of the outbreak and baseline levels come from 2013. The Nutrition Cluster has been focusing on districts that have been heavily affected by EVD but are not areas of active transmission (Nutrition cluster, 27/01/2015). A limited number of trained nutritionists are managing nutritional care in EVD treatment centres (UNMEER, 23/11/2014). 73 nutrition sites continued to provide acute malnutrition treatment services (UNICEF, 24/01/15).
- **Infection prevention and control** in health facilities, including water, sanitation, and hygiene (WASH), triage procedures and PPE, is a key problem. A comprehensive WASH assessment of facilities has been planned (PI, 03/02/2015). In many of the open health facilities, IPC protocols and standards are not maintained regularly despite staff being trained and stock being available (PI, 15/02/2015).

Sierra Leone

Morbidity and mortality

- **Child health:** In 2014, 39,204 children were estimated to die before the age of five. Other than Ebola-related child deaths, an additional 8,593 deaths of children under five are expected in 12 months as a result of health service interruptions, including 2,554 newborns. This corresponds to an increase of more than 20% in under-five mortality, based on projections from a UNICEF assessment conducted in October 2014. The excess neonatal deaths are expected to be mainly attributable to

diarrhoeal disease, neonatal complications, malaria, and pneumonia. The under-five mortality rate in 2014 is estimated at 166 per 1,000 live births, an increase from 161 in 2013 but consistent with the projected further decrease in the baseline mortality rate (UNICEF, 05/12/2015).

- **Measles:** Suspected cases were reported mid-February 2015 in Bombali and Port Loko districts (UNICEF, 11/02/2015).
- **Maternal health:** In 2014, 260,400 women were expected to be pregnant. The estimated number of maternal deaths for 2014 was 1,781. An additional 330 maternal deaths are expected in 12 months due to the EVD outbreak if interruption of health services continues, an almost 19% increase in maternal mortality (UNICEF, 05/12/2015). Maternity wards generally being deserted by women who fear contracting Ebola. Concerns have been raised by aid workers and health professionals that the number of teenage pregnancies has increased since the outbreak, due to closure of schools, stadiums and entertainment venues and the ban on public gatherings, potentially increasing the caseload of complicated deliveries compared to other years. Nurses in Freetown reported an increase in pregnant teenage girls (international media, 18/11/2014).

Maternal Health

An additional **330** maternal deaths are expected in the next 12 months due to the EVD Outbreak , a **19%** increase

- **HIV/AIDS:** Previous success in limiting mother-to-child transmission of HIV may be reversed, as pregnant women are reluctant to go to hospital for treatment. HIV/AIDS patients are receiving a quarterly supply of drugs, compared to a monthly dosage before the Ebola outbreak (international media, 01/12/2014). 57,000 people are estimated to live with HIV, 9,100 of whom were receiving ART prior to the epidemic (UNAIDS, 31/10/2014). To date it is unclear how many patients are still accessing treatment.
- **Ebola long-term effects:** 40% of Ebola survivors in Kenema district have reportedly developed eye problems, 79% suffer from joint pain, 42% have problems sleeping and more than one-third experience peeling of the skin. Many reported problems concerning reproductive health (international media, 17/12/2014).

Health service delivery

- **Health facilities:** The country's public health system is overstretched and struggling to deliver non-EVD care (UNMEER, 16/11/2014). A health facilities assessment between 6 and 17 October 2014 showed that 49 of 1,185 primary health units (4.1%) were closed. Moyamba (8.8%), Bombali (8.5%) and Western Area (7.4%) had the highest proportion of facilities closed (UNICEF, 05/11/2014). Districts with relatively stronger

health systems, such as Kailahun and Kenema, were showing signs of recovery by September, as the rainy season ended and Ebola transmission started to slow down (UNICEF, 05/12/2015). A follow-up assessment of primary health facilities and service provision will be conducted February–March 2015 (UNMEER, 21/02/2015). The MoH recommended that most private health facilities closed during the epidemic, unless adequate services could be provided. All secondary and tertiary public health facilities should be open, except those where a safe work environment could not be provided due to infection of health staff and a need for IPC interventions. However, these facilities are not yet reporting to the MoH, so accurate information is not available (Health Management Information System, 19/02/2015). The Connaught hospital in Freetown is receiving referral patients as well as patients refused by other holding centres for not meeting the case definition. Most of these patients are not accompanied by caregivers and cannot afford the medical fees (NERC, 16/01/2015). In October, MSF closed a 200-bed referral hospital near Bo because of the strain of responding to the EVD outbreak. The facility used to provide urgent obstetric and gynaecological care and lifesaving services for children under 15 (MSF, 16/10/2014).

- **Medication/supplies:** Laboratory capacity to confirm or rule out Ebola and allow for adequate treatment is not equally distributed in all districts. There is a need for additional laboratories or stronger and more reliable sample transportation networks, as well as proper storage capacity and maintenance of blood samples in several districts (UNMEER, 01/02/2015).
- **Personnel:** HCWs do not feel safe in their working environment, resulting in low morale (SL Health Sector Recovery Plan – MoH). Staff do not want to attend to patients with symptoms, for fear of contracting EVD (PI, 23/01/2015). The incidence of EVD was more than 100-fold higher among HCWs than in the general population (CDC, 12/12/2014). As of 18 February, 294 Ebola cases have been reported among HCWs, including 221 deaths (WHO, 18/02/2015). Most HCWs contracted the virus outside Ebola facilities, but in other health facilities that do not have sufficient protective capacity. Private or non-Ebola facilities are considered a large potential risk compared to Ebola treatment units (ETUs) and holding centres. Failure to properly use PPE at care facilities, or ignoring IPC guidelines or standard operating procedures, have been mentioned as a common reason for contracting the disease. Some HCWs work in more than one facility, which also increases the risk of infection (NERC, 06/01/2015). Distrust in public health facilities has increased, as inadequate training in IPC and limited supply and poor quality of protective materials led to the spread of Ebola in health facilities and among health staff (UNDP, 23/12/2014).
- **Utilisation of health services:** Ebola has reduced community trust in the health system (SL Health Sector Early Recovery Plan – MoH). The country's failure to clearly separate ETUs from regular health facilities has destroyed confidence in hospitals and clinics. People die of treatable diseases because they fear coming to the health

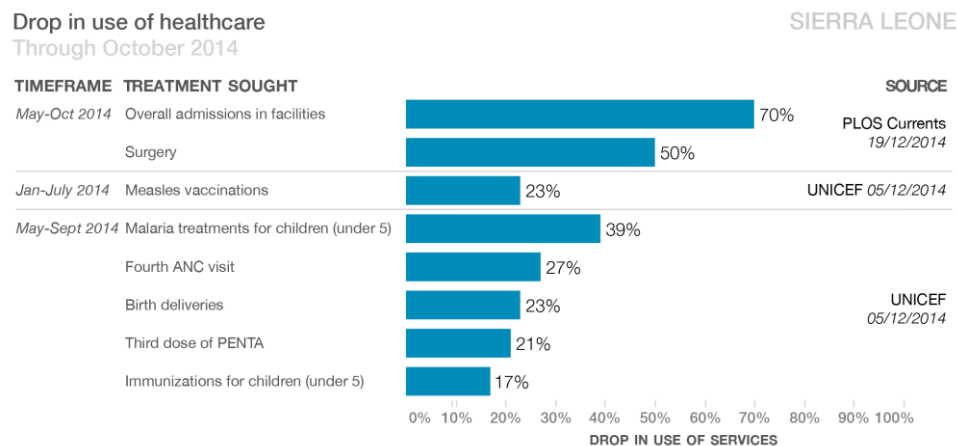
facilities (UNMEER, 07/11/2014). An assessment of all 1,185 primary health units (PHUs) in Sierra Leone in October 2014 showed a significant drop in the utilisation of services in more than half of districts, coinciding with the onset of the EVD outbreak in those districts. Districts with weaker health systems experienced significant declines in utilisation of health services prior to the onset of the outbreak in those districts and a continued decline even as EVD caseloads decreased. The largest decreases were observed in Kambia, followed by Bonthe, Port Loko and Kono district. Moyamba witnessed the smallest reported decrease in utilisation of health services. Viewed against data from 2013, only a small proportion of the decline can be attributed to the rainy season. Contrary to trends in 2013, utilisation of health services did not increase to pre-rainy season levels after the rains subsided in September, which indicates a continued impact of the EVD outbreak (UNICEF, 05/12/2014). According to a household survey by UNDP, 43% of respondents changed the place where they seek medical advice. 24% indicated a reluctance to use health facilities because the normal facility was no longer operational. 26% said to have lost trust in their facility. 22% were happy with self-medication, either through the purchase of drugs in the pharmacy (18%) or the use of herbs (4%) (UNDP, 12/2014).

Drop in utilisation of health services

Facilities providing inpatient care and major surgery reported a **70%** drop in the median number of admissions and a **50%** reduction in the number of major surgeries

Between May and October 2014, facilities providing inpatient care and major surgery reported a 70% drop in the median number of admissions and a 50% reduction in the number of major surgeries. About 35,000 sick people in Sierra Leone are estimated to have been excluded from inpatient care since the epidemic's onset in mid-May until the end of 2014 (PLOS Currents, 19/12/2014). A September survey in Kenema showed the primary reason for decreased use of health facilities was fear of contracting Ebola, including in outpatient facilities. Some misconceptions have been reported, such as the belief that staff were paid for each patient referred to an ETU. Another common misconception was that health facility staff injected patients with Ebola or took their blood for financial gain or magical power (CDC, 02/01/2015). A HCW in Connaught Hospital, Freetown, noted that people were not used to using medical services before the outbreak due to high fees, and were seeking care from traditional healers or self-medicating. Except for the treatment of malaria, which is free, medical visits cost SLL 15,000 (USD 3.39) and drugs are to be paid for by the patient. However, since the Ebola outbreak, many people do not want the sick in their homes and send them to the entrance of hospitals, where they may leave them, as they cannot afford to pay for services.

Due to the impact of EVD on people's livelihoods and a reduction in income, access to medical services has decreased (PI, 23/01/2015). The World Bank reported that usage of health care facilities may have declined in Freetown due to EVD, but seems unaffected in other districts of the country (WB, 12/01/2015). A knowledge, attitudes and practices (KAP) study conducted in October reported that 93% of respondents would go to a health facility if they had a high fever, and 98% if they suspected to have contracted Ebola (Focus 1000, 12/2014).



- Immunisation:** For measles, vaccination rates dropped from 99% in January 2014 to 76% in July 2014, as mass vaccinations were suspended (UNICEF, 03/11/2014). From May to September an increasing number of primary health facilities did not receive any children for the third round of Penta vaccination, particularly in Northern province. Overall coverage of the third dose of Penta vaccine decreased by 21% (UNICEF, 05/12/2015). In a KAP study conducted in September, 17% of respondents reported having missed under-five immunisation in the previous three months (Focus 1000, 09/2014). In Kenema district, vaccination coverage remained stable in some communities because HCWs went directly to villages to vaccinate (CDC, 02/01/2015).
- Malaria:** Between May and September 2014 the number of children under five treated for malaria declined by 39% (UNICEF, 05/12/2014). In early December, the Government, with support of MSF, distributed malaria medication to 2.5 million people. 75% of those who got the medication reported taking them appropriately. Some were reluctant to take the medicine due to side effects and fear of having to go to the hospital (international media, 31/12/2014; MSF, 21/11/2014). The National Malaria Control Programme conducted the second cycle of its mass drug administration campaign 16–19 January in selected chiefdoms in Bombali, Kambia, Koinadugu, Moyamba, Port Loko and Tonkolili, and in the Western Area (Government, 12/01/2015; UNICEF, 29/01/2015).

- Maternal health:** Women are reluctant to access maternal and reproductive health services including ANC, emergency obstetric and neonatal care, and contraceptives because of the EVD epidemic. In some areas, the number of pregnant women seeking healthcare decreased dramatically – in Kenema, it dropped from 333 in May 2014 to only 26 in September (UNDP, 12/2014). Health staff have been reluctant to attend to pregnant women, as common symptoms such as fever and bleeding are also symptoms of Ebola (UNMEER, 01/02/2015). The rise in number of home deliveries increases the likelihood of obstetric disorders and maternal mortality (UNMEER, 16/11/2014). The number of women attending hospitals and health centres to give birth dropped by 23% in September 2014, compared to May the same year (UNICEF, 05/12/2014). Deliveries in health facilities were perceived less affected by the Ebola outbreak compared with ANC, postnatal care (PNC) and immunisation services (CDC, 02/01/2015). Countrywide, the number of women coming for their fourth ANC visit dropped by 27% between May and September 2014 (UNICEF, 05/12/2014). In a KAP study in September, 14% of participating women reported to have missed antenatal clinic visits in the previous three months (Focus 1000, 09/2014). The number of first ANC visits in Kenema district decreased by 29% between May and July 2014, from 2,086 to 1,488. The number of PNC visits within 48 hours of delivery decreased by 21% over the same period, from 1,923 in May to 1,512 in July. HCWs, support staff, and pregnant and lactating women reported a sharp decline in facility use for routine health services immediately after the Ebola outbreak began (CDC, 02/01/2015). Health facilities have ceased providing family planning services (IRIN, 04/02/2015). In October, pregnant women suspected to have Ebola were being referred to Ebola holding centres or ETUs, but there were no services available at these facilities to support deliveries (UNICEF, 29/10/2014).
- HIV/AIDS:** 55% of PHUs provide prevention of mother-to-child transmission (PMTCT) services. The numbers of PMTCT visits declined 23% between May and September 2014. The largest decreases occurred in Port Loko (45%), Bonthe (41%) and Kambia (40%) (UNICEF, 05/12/2015). Assessments have shown that some ART sites are no longer functioning. Some of them were temporarily quarantined (UNAIDS, 31/10/2014). By September, more than 90% of PMTCT facilities had antiretroviral shortages – in Bombali, Koinadugu, Kenema, Kono and Bonthe districts. Only in four districts (Port Loko, Tonkolili, Bo and Pujehun) were more than 30% of facilities stocked with both HIV test kits and antiretrovirals in September (UNICEF, 05/12/2015). Between January and December 2014, services to prevent PMTCT services dropped by 80% (international media, 01/12/2014). Outreach services, counselling and testing have been suspended due to a reduction in resources as they are being reallocated to the EVD outbreak. A lack of protective equipment and patients' and health professionals' fear of Ebola make HIV testing impossible. Some facilities providing HIV treatment have been used as ETUs, resulting in a significant decrease in the number of patients receiving antiretrovirals (UNDP, 23/12/2014).

UNAIDS is currently assessing the impact of EVD on HIV/AIDS in 2014, but the outbreak has affected information flows, slowing the process (PI, 20/02/2015).

- **Nutrition:** 35% of PHUs normally provide outpatient therapeutic feeding programmes (OTP). An overall decrease of 9% in OTP admissions was observed between May and June 2014. Particularly significant decreases occurred in Tonkolili (36%), Pujehun (29%), Kailahun and Port Loko (both 20%). In June, ready-to-use therapeutic food (RUTF) was distributed, as long periods of shortages in 35% of PHUs had led to an increase in OTP admissions in all districts. Between July and August the number of OTP admissions decreased by 29%; the largest drops occurred in Tonkolili (66%), Moyamba (48%), and Bombali (46%) (UNICEF, 05/12/2015). Countrywide nutrition surveys are scheduled yearly, with the next due in June 2015 (PI, 11/02/2015).
- **Mental health:** The population is struggling with grief and complex psychological needs, including fear and worry, isolation, disconnection, separation. Many of the reported issues are normal reactions to distressing events and many people will be able to recover over time. However, with reduced access to support systems and normal coping strategies in the communities, there is an increased risk that some will develop mental health problems. The present mental health system is not equipped to deal with large numbers of people seeking psychological support (Mercy Corps, 09/01/2015).
- **Infection prevention and control:** Several facilities are facing financial constraints in implementing IPC protocols (UNMEER, 01/02/2015). Lack of adequate water supply in most Ebola care centres (ECCs) is a serious constraint and a cause for concern. The Ministry of Water Resources has conducted an assessment of water supply in all ECCs. IPC protocols should be met by both Ebola and non-Ebola facilities (PI, 09/01/2015). In October, the CDC reported widespread gaps in IPC systems and resources critical for Ebola containment and prevention, particularly shortages of trained staff, PPE, safe transport and standardised IPC protocols, in both Ebola isolation centres and in district hospitals (CDC, 12/12/2014).

Aggravating Factors

Regional


- All three most affected countries had weak health systems before the EVD crisis. Disease surveillance and health information systems were limited. This enabled the EVD outbreak to reach unprecedented numbers of cases, and meant the reallocation of already limited resources to the epidemic, diverting attention from other morbidity and mortality present in the countries (WHO, 11/12/2014).

- The rainy season is expected to start in April/May. Seasonal variation in health facility utilisation could further impact morbidity and mortality, as roads become impassable and bridges washed out. The water table is high, and wells are hand-dug and shallow. Wells can be contaminated in the rainy season when they flood, potentially leading to an increase in water-borne diseases (PI, 20/02/2015).

Guinea

- Community resistance to the Ebola response remains widespread, particularly in ten prefectures (Boffa, Dubreka, Faranah, Forecariah, Kindia, Kissidougou, Kouroussa, Macenta, Kaloum and Matoto). This is making it difficult to transmit information about the disease to the population (PI, 13/02/2015; UNMEER, 18/02/2015). Recent incidents include hiding of the sick and hostility towards vaccinators and those disinfecting schools around Conakry. There have been threats due to rumours of administration of Ebola vaccines in schools, burning of an ETU in the capital, and attacks on aid workers by communities in Forecariah (UNMEER, 16/02/2015; international media, 15/02/2015; IFRC, 12/02/2015; Reuters, 12/02/2015). Some report that resistance is also posing a risk to in-depth needs assessments, leading to a lack of information on the current situation and the needs of the population (PI, 12/02/2015).
- 46% of the population lives within five kilometres of a health facility (PI, 06/02/2015).

Access to health services

 Only **46%** of the population lives within **5 kilometres** of a health facility

- The public health system is chronically underfinanced. Many hospitals are in poor condition due to a lack of maintenance (PI, 04/02/2015). The health system is based on a cost recovery model (payments from patients finance the facilities and services). Since the beginning of the epidemic, the drop in consultations has led to a drop in income, resulting in a lack of maintenance of facilities and equipment (PI, 12/02/2015). 57% of public health facilities require maintenance, an increase from the reported 33% in 2013 (PI, 06/02/2015). Even before the epidemic, there was a great lack of supplies and equipment. The Ebola outbreak has brought this to attention, but there is a risk the situation will return to the previous state (PI, 06/02/2015). An internationally funded programme to reinforce the health system in Forest Guinea in 2014 was adjourned because of the epidemic, and an evaluation mission began in February 2015 to obtain an updated overview of needs (PI, 13/02/2015).
- Female genital mutilation (FGM) is widespread and appears to have been a potential cause of EVD transmission. Sensitisation of FGM practitioners has been a tool in the Ebola response, which may be interpreted as condoning the practice (PI, 05/02/2015; J.N. Anoko).

Liberia

- Before the EVD outbreak was declared, Liberia's health system was weak, with inadequate infrastructure, a lack of skilled HCWs and poor health care management. People's access to essential health services was limited, contributing to high child and maternal mortality rates. In spite of efforts to reduce maternal mortality, preliminary data suggests that in 2013 it had increased to over 1,000 maternal deaths per 100,000 live births, making it one of the highest in the world (HRH, 12/12/2014).
- In February 2014, before the outbreak was declared, HCWs in Liberia went on strike because of lack of payment. Routine HCWs have not been paid since September 2014. There has also been a lack of protective equipment. As a result, continuous strikes were reported in more than half of the operating health facilities in River Gee, Bomi and Grand Cape Mount counties in October, impacting health services (IMS, 30/01/2015; UNICEF, 29/10/2014).
- There are still occasions of community resistance, refusal to cooperate with Ebola management teams, and unsafe burials (WHO, 28/01/2015; 11/02/2015). Misconceptions about clinical trials of Ebola vaccines led to resistance against the periodic intensification of routine immunisation in Cavalla, Gbao and Putu districts (UNMEER, 05/02/2015).

Sierra Leone

- The health system suffers from a number of key deficits. There is a lack of skilled health workers, and they are not equally distributed throughout the country. Infection prevention and control levels are weak, as well as the integrated disease surveillance system. No active referral system is in place and there is a lack of community ownership in health service delivery. Basic indicators such as child and maternal mortality are among the poorest in the world. With the outbreak of Ebola, funds have been reallocated from other public health problems to respond to Ebola issues (SL Health Sector Recovery Plan – MoH, 2015).
- The Government of Sierra Leone has announced that the risk allowances for frontline healthcare workers will finish by the end of March (AFP, 22/01/2015). Non-payment of these allowances since October 2014 has led to protests by HCWs, with strikes and tensions across the country (local media, 12/02/2015; UNMEER, 01/02/2015; 18/01/2015).
- Instances of resistance to the Ebola response have been reported over the course of the epidemic, including lack of cooperation and following of preventive measures, and clashes between security forces and civilians (WHO, 11/02/2015; UNMEER, 05/02/2015; Reuters, 14/10/2014).

Response Capacities

- As of 23 February, the Response Plan for Ebola Virus Outbreak in Guinea, Liberia and Sierra Leone has been 57% funded (OCHA, 23/02/2015).
- All three most affected countries are moving towards early recovery. Governments are developing joint strategies with international agencies, focusing on health system strengthening.
- EVD activities are scaling down as the number of newly reported cases decreases. Some Ebola treatment centres are being decommissioned and repurposed, as have other resources that have been instrumental in the Ebola response. Attention is being paid to the decontamination of Ebola facilities and plans are made to repurpose staff who have been working in the Ebola response.
- Clinical trials of Ebola vaccines are ongoing in Liberia and Guinea. Trials of experimental treatment using the plasma of survivors look promising in Liberia, and extension of the programme into Sierra Leone is planned (international media, 18/02/2015; 20/02/2015). In Guinea, the government has approved the wider use of an experimental drug in ETUs after successful initial trials (international media, 07/02/2015). The ReEBOV Antigen Rapid Blood Test has been approved for use by the WHO in February. As the test and its analysis don't require electricity and laboratory facilities it can reportedly be used at lower health care facilities or in mobile units for patients in remote settings. However, where possible, there is a recommendation to get confirmed results from the rapid test by the more precise conventional testing (BBC 20/02/2015).

Information Gaps and Needs

During the outbreak, the health sector has largely focused on Ebola cases, but the impact on other aspects of the health system and services is yet to be assessed in-depth. Information disaggregated at district level is needed. The situation is very dynamic, so information dating from October or November 2014 might not reflect the current needs.

In general, less information is publicly available about the extent of the impact of Ebola on the health sector in Guinea than for Liberia and Sierra Leone. The impact might be different in Guinea considering that not all prefectures have been directly affected by the EVD outbreak, in contrast to the other two countries.

Across all three countries, timely information on some key topics is required to measure the impact of the Ebola crisis on the health sector.

- **Maternal health:** It is unclear how many women lack access to antenatal and prenatal care. There is no conclusive data on the number of deliveries in health facilities or attended by a health professional. Though anecdotal information shows these services have been impacted by the EVD outbreak, the extent cannot be determined with the available information.
- **Family planning:** There are reports of an increase of teen pregnancies. However, the extent of this increase is unknown. To prevent a further increase of unwanted pregnancies, information on the availability of family planning services is required.
- **HIV/TB:** To date, the impact of the EVD on access to treatment has not been assessed. The number of people having access issues and any regional differences in access are unclear. Any impact on disease incidence is not clear.
- **Monitoring/surveillance:** Information on diseases other than Ebola is barely available, as monitoring systems and disease surveillance have been neglected.
- **Immunisation:** No conclusive information is available on where vaccination rates have decreased most significantly or how many children have missed their vaccinations.
- **Resources:** Assessments on the status of health facilities are being conducted, but the level of functionality is not yet determined, nor do we know which services are being provided. The extent to which other services have suffered from reallocation to the EVD outbreak needs to be determined. A better view of the required supplies available and what is lacking would enhance planning of activities.
- **Medication:** Information on areas where shortages of drugs occur and which medicines are lacking is necessary.
- **Infrastructure:** Some structures were used for Ebola purposes, such as community care centres. An update on the use of these facilities, including schools, churches, and Lassa fever facilities would be useful. Information about access to electricity and water in health facilities is necessary, especially for the planning of early recovery activities.
- **Knowledge and practices:** Little information is available on the implementation of quality control protocols in health facilities, including IPC measures and triage.
- **Mental health:** No substantial assessments have been conducted on the impact of the epidemic on mental health, despite indications of negative outcomes.

Lessons Learned

Severe Acute Respiratory Syndrome (SARS) in China, 2002–2003

- The SARS epidemic exposed weaknesses in China's public health infrastructure, including inadequate state funding, lack of effective surveillance systems, and severe shortages in facilities and medical staff prepared for an epidemic infectious disease outbreak (NCBI 2003).
- The Chinese Government established a case reporting structure, strengthened its emergency response system, and provided funding for the prevention and control of SARS (NCBI 2003).
- At first, the response was slow and the Government did not seem to recognise the severity of the crisis, aggravating the situation. The SARS experience increased the recognition and understanding of government officials and the public about the importance of infectious disease control and prevention in general (NCBI 2003).

Middle East Respiratory Syndrome (MERS) in Saudi Arabia, 2012

- The authorities set up a special structure to contain the spread of the disease. The Government has taken steps to ensure the reliability of information and timeliness of reporting by developing an electronic system to improve mechanisms for reporting new cases to the Ministry of Health (IRIN 28/08/2014).
- Transparency and coordination, both at the global and national level, were the key to contain the epidemic (IRIN 28/08/2014).

Past EVD outbreak in DRC, 2003

Humanitarian actors have to take into account the stigmatisation of frontline health workers. Rejection of health workers can hamper the mobilisation and the containment of the outbreak. Some Red Cross volunteers who helped in the 2003 outbreak in DRC were still regarded as witchdoctors three years later (France24 02/09/2014).

EVD outbreak, 2013–2014

- Classic "outbreak control" efforts are no longer sufficient for an epidemic of this size, it requires a large-scale, coordinated humanitarian, social, public health, and medical response. This combines classic public health measures with safe and effective interventions that include behavioural changes and when possible, vaccination (NEJM 23/09/2014).

- Certain conditions can transform what might have been a limited outbreak into a massive, nearly uncontrollable epidemic: changes in the interactions between humans and their environment, high population mobility, local customs that can exacerbate morbidity and mortality, spread of the disease in densely populated urban centres, lack of trust in authorities, dysfunctional and under-resourced health systems, national and international indifference, and lack of effective, timely response (NEJM 23/09/2014).
- Key lessons and best practices in the containment and prevention of the spread of EVD in Nigeria have been identified. These include: the prior establishment of an integrated disease surveillance programme; decentralisation of the National Ebola Emergency Operations Centre, while simultaneously building the state's capacity to manage the outbreak; bringing sectors together under one command structure to enable effective inter-sectoral coordination; monitoring of national entry points; centralisation of media messaging within a single official source to minimise rumours; mobilisation, awareness raising and sensitisation of the population to signs and symptoms; and payment of incentives for health workers to encourage them to remain in EVD-affected areas (UNICEF 24/09/2014; Clinical Medicine, 01/2015).
- With rapid deployment of resources, containment can be achieved. With targeted and active medical care, the survival rate of Ebola patients has increased (international media, 12/2014). Adequate laboratory facilities and technical capacities are required for confirmative diagnosis of infectious diseases, and a network for the safe and rapid transportation of biological specimens would increase early detection. Insufficient capacity for IPC can limit treatment and poses a risk for further transmission (WHO, 05/09/2014; OXFAM, 01/2015).

Abbreviations

ACT:	Artemisinin-based Combination Therapy
ANC:	Antenatal Care
ART:	Antiretroviral Therapy
ARV:	Antiretroviral
CCC:	Community Care Centre
DTP:	Diphtheria, Tetanus, Pertussis
ECC:	Ebola Care Centre
ETU:	Ebola Treatment Unit
EVD:	Ebola Virus Disease
FGM:	Female Genital Mutilation
HCW:	Healthcare Worker
IHR:	International Health Regulations
IMS:	Incidence Management System (Liberia)
IPC:	Infection Prevention and Control
KAP:	Knowledge, Attitudes and Practices
MoH:	Ministry of Health
NERC:	National Ebola Response Centre (Sierra Leone)
OTP:	Outpatient Treatment Program
PHU:	Primary Health Unit
PI:	Personal Interview
PIRI:	Periodic Intensification of Routine Immunization
PMTCT:	Prevention of mother-to-child Transmission
PNC:	Postnatal Care
PPE:	Personal Protective Equipment
RDT:	Rapid Diagnostic Test
RUTF:	Ready-to-use Therapeutic Food
TB:	Tuberculosis

Key Characteristics for Health: Guinea, Liberia, Sierra Leone

Key Indicators	Guinea	Liberia	Sierra Leone
Total population	11.45 million (WB 2012)	4.19 million (WB 2012)	5.98 million (WB 2012)
Outbreak declares	23 March 2014	29 March 2014	25 May 2014
Age distribution of population	42.9% under the age of 14 (HEWS 25/09/2012)	43.49% under the age of 14 (HEWS 25/09/2012)	43% under the age of 14 (HEWS 25/09/2012).
Cumulative number of cases (deaths)	3,155 (2,091) (WHO, 25/02/2015)	9,238 (4,037) (WHO, 25/02/2015)	11,301 (3,461) (WHO, 25/02/2015)

Health Indicators: Pre-crisis Situation

Key Indicators	Guinea	Liberia	Sierra Leone
Infant mortality rate (per 1000 live births)	65 (UNDP 2014)	56 (UNDP 2014)	117 (UNDP 2014)
U5MR (per 1000 children under 5)	101 (World Bank 2012)	75 (UNDP 2014)	182 (UNDP 2014)
2014 HDI rank (score)	179 (0.392) (UNDP 2014)	175 (0.412) (UNDP 2014)	183 (0.374) (UNDP 2014)
People below the poverty line (%)	58% (UNFDA 2010)	64% (UNFDA 2008)	70% (UNFDA 2012)
Health expenditure, total (% of GDP)	6% (World Bank 2012)	16% (World Bank 2012)	15% (World Bank 2012)
Maternal mortality rate (per 100,000 live births)	980 (UNICEF 2012)	990 (UNICEF 2012)	1,100 (WB 2013)
Immunisation, measles (% of children aged 12–23 months)	58 (World Bank 2012)	80 (World Bank 2012)	80 (World Bank 2012)
Incidence of malaria (per 100,000 population)	38,333 (WHO 2012)	27,793 (WHO 2012)	19,027 (WHO 2012)
Average births attended by skilled health personnel	45 (WHO 2006)	61 (WHO 2006)	61 (WHO 2006)
Physicians per 10,000 population	1 (World Bank 2010)	0.1 (WHO 2006)	0.2 (WHO 2006)
Nurses and midwives per 10,000 population	0.4 (World Bank 2010)	2.7 (WHO 2006)	1.7 (WHO 2006)
Main causes of death in children under 5 (%)	Malaria: 27 Acute respiratory infections: 13 (WHO 2012)	Malaria: 21 Acute respiratory infections: 14 (WHO 2012)	Acute respiratory infections: 17 Diarrhoea: 14 Malaria: 14 (WHO 2012)
Nutrition levels (children under 5)	35.8% underweight, 16.3% stunting, 5.6% wasting (WHO 2012)	20.4% underweight, 39.4% stunting, 7.8% wasting (WHO 2007)	21.1% underweight, 44.9% stunting, 7.6% wasting (WHO 2010)

Maps of Affected Areas

Year-on-year drop in PHU visits

October - December 2014



Notes on this data

Due to closures and stresses from Ebola, individual PHUs (and Koinadugu district) may not have reported visitation data to the Sierra Leone Ministry of Health in a given month. As such, **the percentages portrayed here are approximate and subject to revision** as better data becomes available.

Total ebola caseload

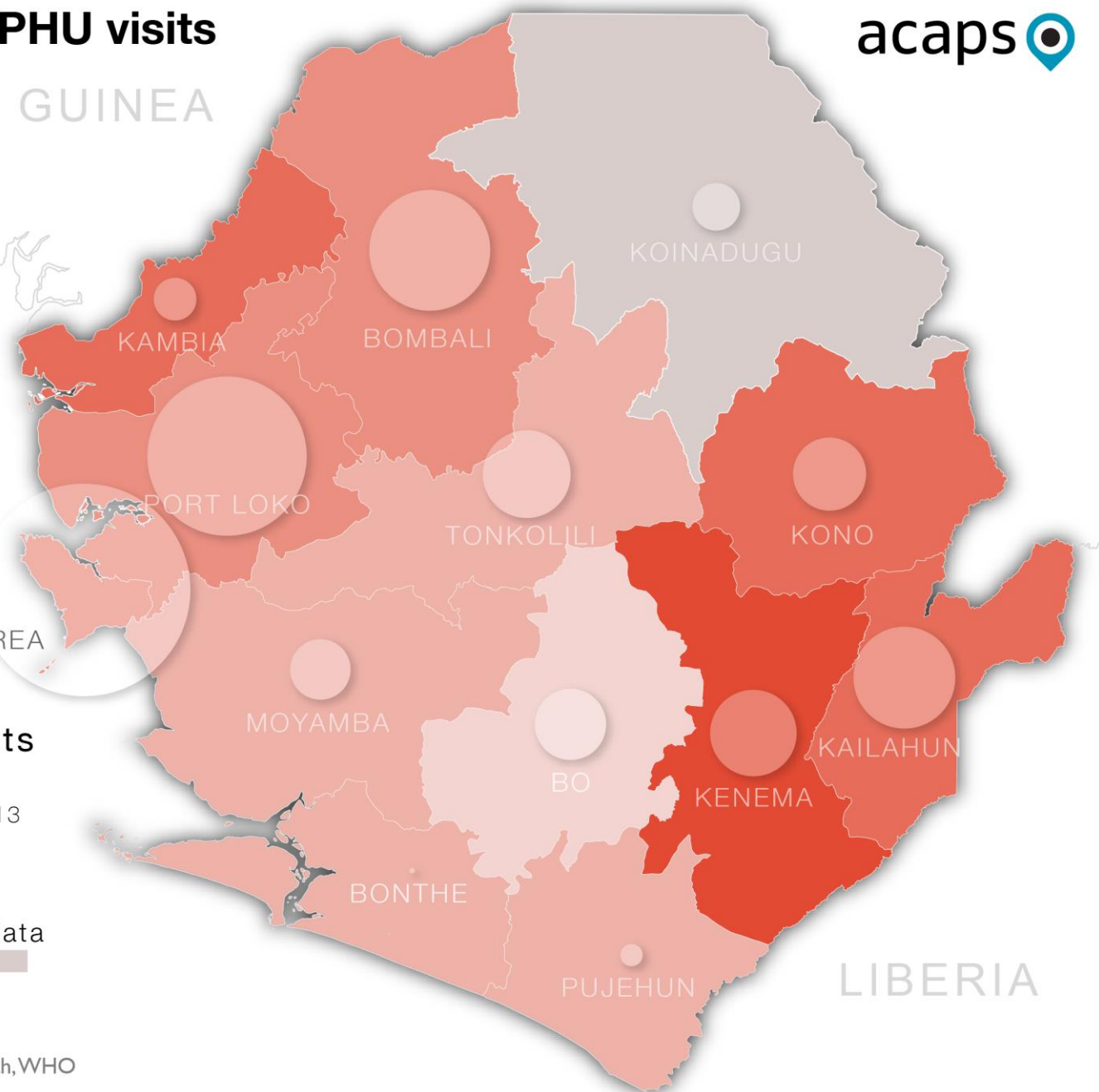
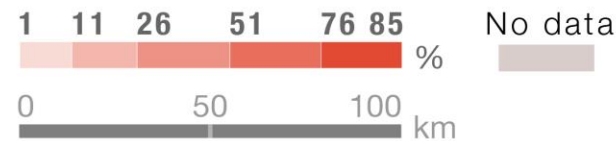
(suspected and confirmed) through February 2015



Percent decline in patients seeking non-ebola care

As compared to October-December 2013

42.0% National year-on-year decline in visits



Sources: UNMEER, Sierra Leone Ministry of Health, WHO

Measles Vaccination Rates

2013



GUINEA
59.6% national average

SIERRA LEONE
79.4% national average

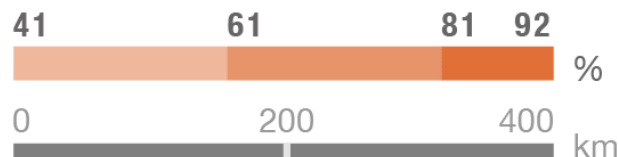
STANDARDS

90% recommended national vaccination rate*

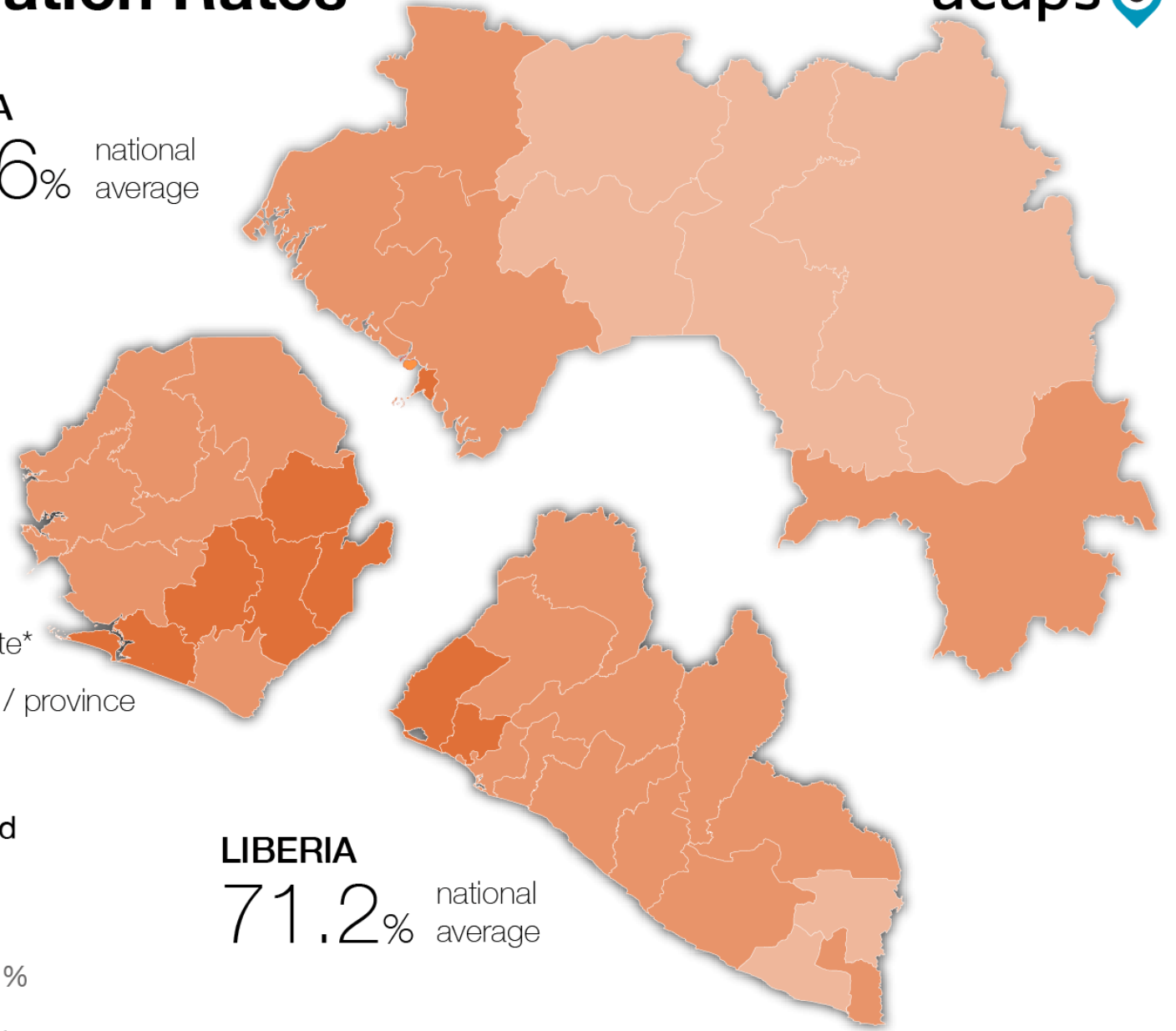
80% recommended district / province vaccination rate

Under-5 children vaccinated against measles

Percentage of all under-5 children



LIBERIA
71.2% national average



Sources: UNMEER, DHS 2013

*According to SPHERE and WHO

Notable Baseline Health Indicators for Guinea

2013

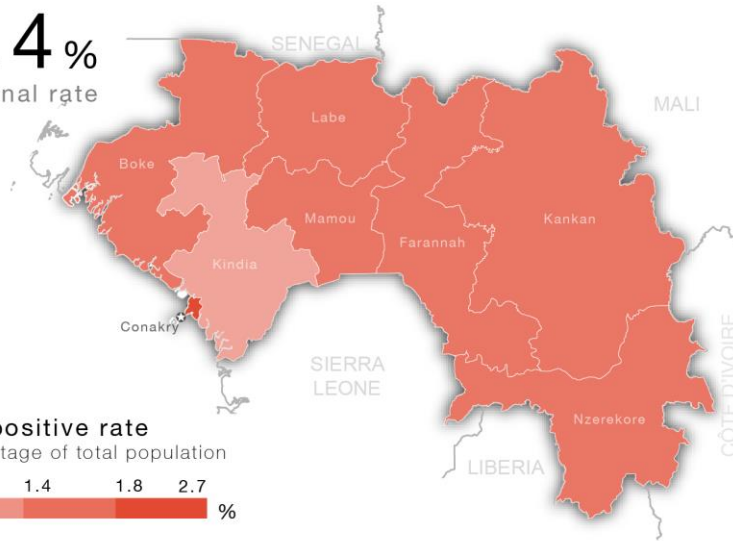


1.4%

National rate

HIV positive rate
Percentage of total population

1 1.4 1.8 2.7 %

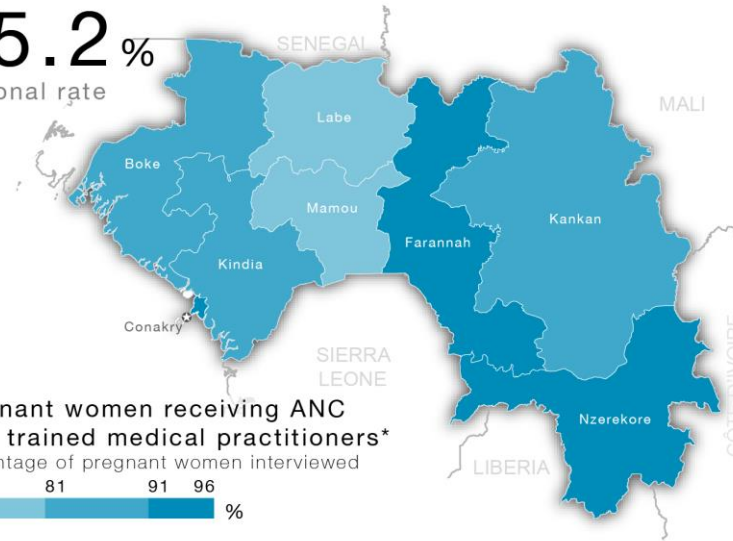


85.2%

National rate

Pregnant women receiving ANC from trained medical practitioners*
Percentage of pregnant women interviewed

71 81 91 96 %

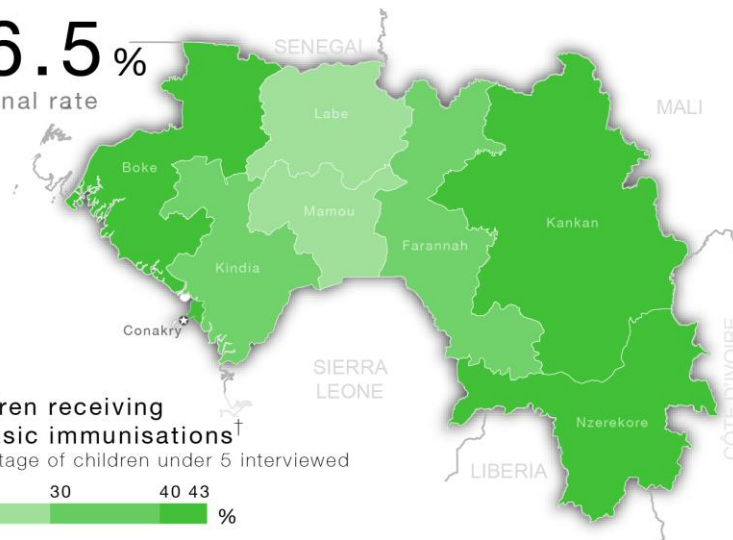


36.5%

National rate

Children receiving all basic immunisations†
Percentage of children under 5 interviewed

19 30 40 43 %

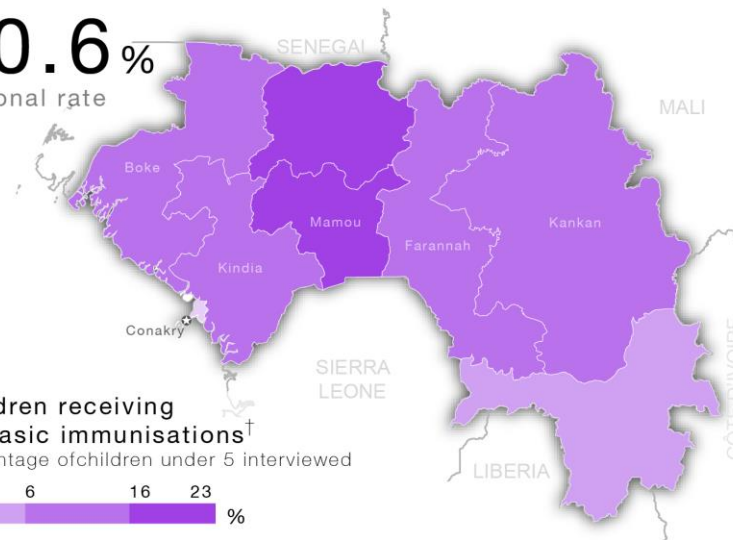


10.6%

National rate

Children receiving no basic immunisations†
Percentage of children under 5 interviewed

0 1 6 16 23 %



Sources: UNMEER, DHS 2013

*Doctors, nurses, midwives or community health workers

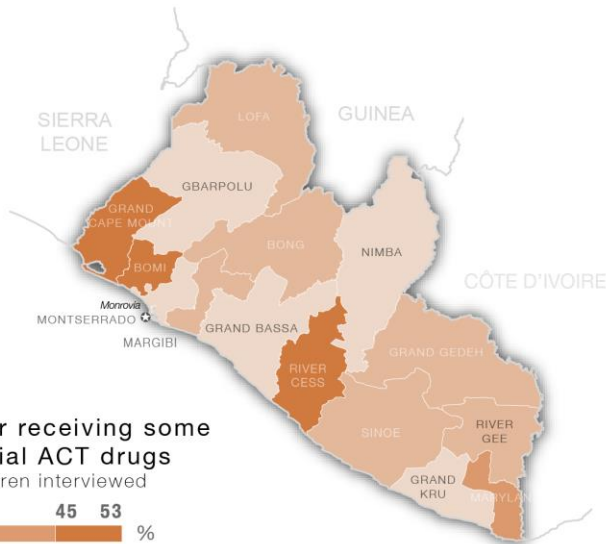
† Defined by DHS as measles, BCG, polio 0 - 4, DPT 1-3



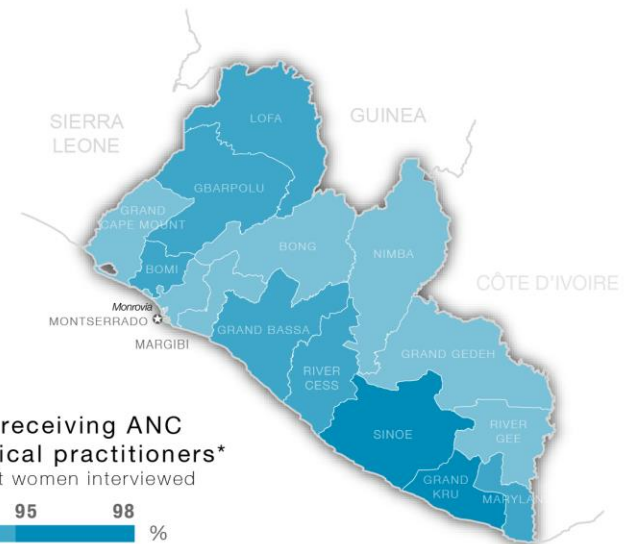
Notable Baseline Health Indicators for Liberia

2013

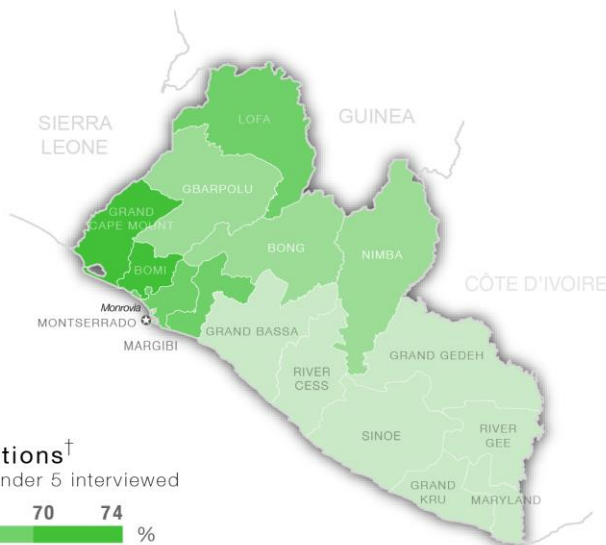
42.9%
National rate



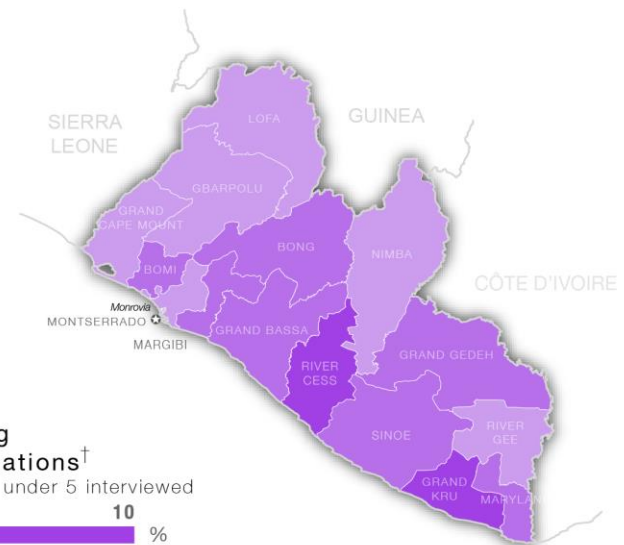
95.9%
National rate



54.8%
National rate



1.5%
National rate



Sources: UNMEER, DHS 2013

*Doctors, nurses, midwives or community health workers

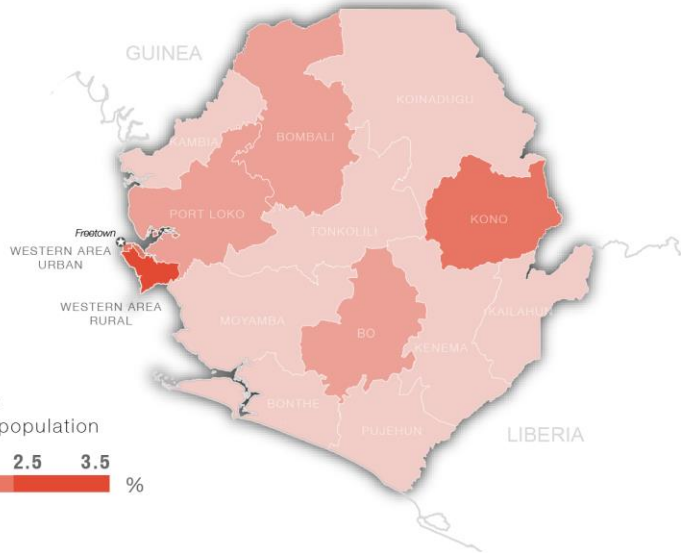
† Defined by DHS as measles, BCG, polio 0 - 4, DPT 1-3

Notable Baseline Health Indicators for Sierra Leone

2013



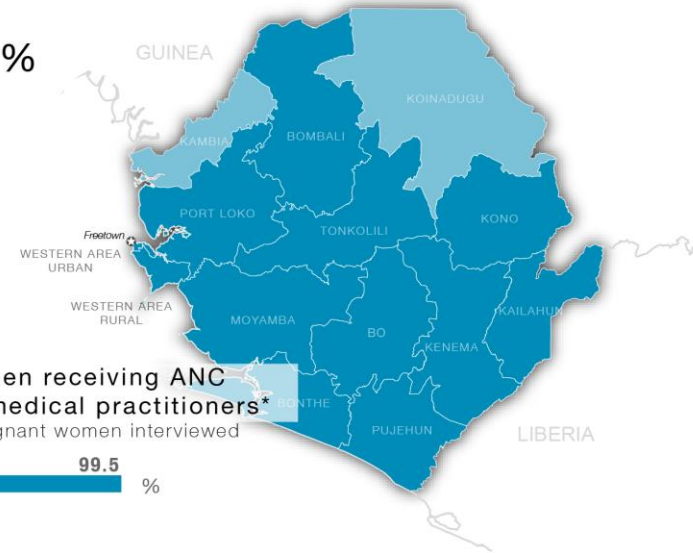
1.2%
National rate



HIV prevalence
Percentage of total population

0.7 1.0 1.5 2.5 3.5 %

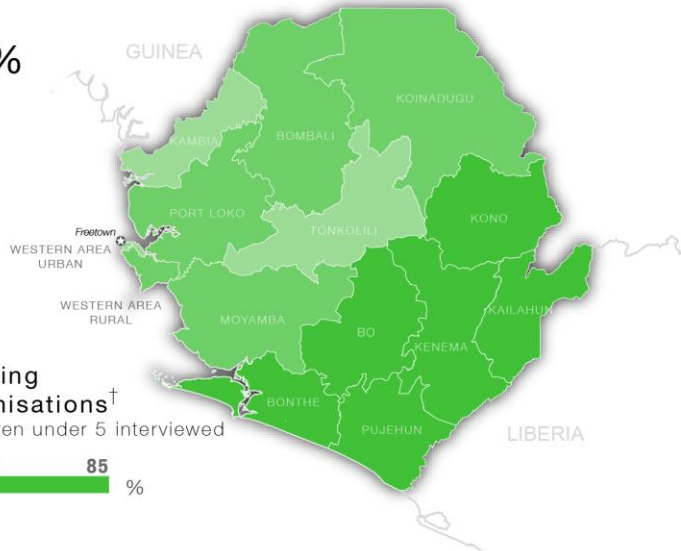
97.1%
National rate



Pregnant women receiving ANC from trained medical practitioners*
Percentage of pregnant women interviewed

90 93 99.5 %

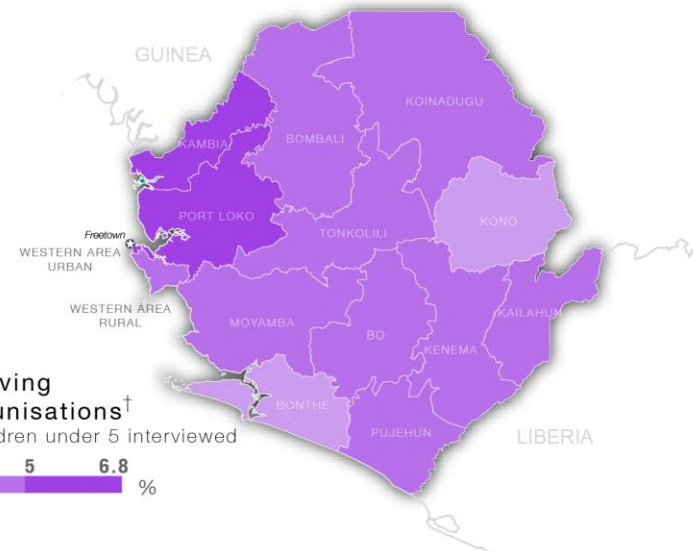
68.0%
National rate



Children receiving all basic immunisations†
Percentage of children under 5 interviewed

51 61 71 85 %

3.5%
National rate



Children receiving no basic immunisations†
Percentage of children under 5 interviewed

0 1 5 6.8 %



Sources: UNMEER, DHS 2013

*Doctors, nurses, midwives or community health workers

†Defined by DHS as measles, BCG, polio 0 - 4, DPT 1-3