Government of Sierra Leone
Ministry of Health and Sanitation

Annual Health Sector Performance Report 2016

Contents

Table of figures

Foreword

The 2016 Health Sector Performance Report (HSPR) presents an assessment of how the health system in Sierra Leone has performed in 2016 – the first full year of health sector reconstruction after the Ebola epidemic. It is the first time that Sierra Leone has reported on a complete range of internationally agreed indicators that span the entire health system, and as such makes a significant improvement on previous HSPRs. This new, robust approach to monitoring and evaluation will support the Ministry of Health and Sanitation (MoHS) to engage in effective health sector planning and decision-making going forwards.

The report reflects and builds on the mid-year review and annual review workshops that brought together a wide range of stakeholders to report on their activities, reflect on the challenges they faced, and look forward to 2017 to build on our shared successes. This included not only elected officials of the Government of Sierra Leone (GoSL) and representatives of Ministries, Departments, and Agencies, but also development partners and a much larger role for civil society representatives than has ever been seen before. As such, I am confident that the report provides a comprehensive and honest assessment of how the health sector has performed this last year.

The MoHS remains committed to improving the health of the population through prioritising evidence-based, cost-effective interventions. This is the premise behind the strategic Health Sector Recovery Plan 2015-2020 and the operational Basic Package of Essential Health Services 2015-2020, and this is what will enable the Ministry to achieve the health-related targets in the Agenda for Prosperity 2013-2018. As this year's HSPR shows, we are making steady progress in this direction.

The Government recognises the contribution of all actors in the health system to achieving our shared goals. This includes first and foremost the hard work of frontline health workers from doctors, nurses, and midwives, to community health workers (CHWs); but also the hard

work of managers and technical staff across the MoHS at district and central level; health development partners; civil society representatives; the private sector; and of course the communities themselves. Under the Government's leadership, and particularly the leadership of the Ministry, a strong, collaborative working relationship amongst all stakeholders will continue to be fostered to improve the health of the population.

Last year I committed to the annual publication and dissemination of the HSPR, and this year again I re-affirm this commitment. It is truly the most important report the MoHS produces, and I am proud to share it with all of you. I encourage all of us to use its findings to inform future plans to improve health in Sierra Leone, so that together we can deliver a strong, resilient health system that meets the needs of the whole population.

Dr Abu Bakarr Fofannah
Honourable Minister of Health and Sanitation

Remarks from the Chief Medical Officer

2016 was a busy year for the Ministry – but also one that was full of optimism that through collaborative work, much can be achieved. The reconstruction of the health sector following the Ebola outbreak continued at full speed, with the technical and professional staff of the MoHS working closely with their counterparts across development partners and civil society organisations to deliver on a broad range of targets related to improving health outcomes for Sierra Leoneans.

Challenges of course remain, and are detailed in this report, but what this report also clearly shows is that on the whole performance is improving: mortality is falling, coverage of key interventions is improving, and the reconstruction of the health sector is beginning to show results.

The MoHS would like to thank all our partners for their support, and particularly the Government of Sierra Leone for its strong leadership that has made the performance detailed in this report possible.

Dr Brima Kargbo
Chief Medical Officer of Sierra Leone

Remarks from the Permanent Secretary

The Health Sector Performance Report (HSPR) is the foundation of a well-performing Ministry of Health and Sanitation (MoHS). It reports, honestly and frankly, on activities across the whole MoHS, as well as whether those activities actually translated into improved outputs and health outcomes for the population. This allows us to take stock of what is working well, and what is not working well, and to adjust our plans for future years accordingly.

However, it also performs perhaps an even more important role than that: the role of fulfilling the Ministry's duty of accountability to the population – accountability for how it has spent its funds, and what results it has achieved. In addition to demonstrating our own accountability, the Ministry also continues to push all development partners and actors across the health sector to be accountable for their work to improve health in Sierra Leone through monitoring programme implementation.

It is my pleasure therefore to present this report to you all – a full account of our activities and performance, and the challenges we faced in getting there. A sincere thank you to all those that contributed to these results.

Mr David W S Banya
Permanent Secretary of the Ministry of Health and Sanitation

Acknowledgement

The MoHS engine has been firing on all cylinders since the end of the Ebola outbreak, working across all the directorates and all the districts to rebuild the health system. Accounting for our activities and our performance has therefore never been more important – and so I'm very pleased to present the new, updated style of reporting for the 2016 Health Sector Performance Report (HSPR). For the first time, we have tracked the performance of the health sector across a multitude of high-level indicators, showing clearly not only the scale of activities undertaken, but also the improvement in health outcomes as a result of all of this hard work.

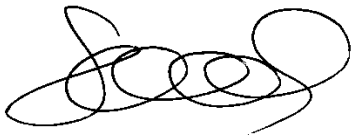
Once again, two sector-wide stakeholder engagement sessions were held to inform this report, and in particular to share the challenges that different teams and areas faced in carrying out their planned programme of work. I am as passionate about celebrating our successes as I am about being honest about our failures and the challenges we face, and this report reflects that spirit with each area highlighting the challenges they encountered and plans for overcoming them in 2017.

I wish to thank the leadership of the MoHS, notably the Honourable Minister Dr Abu Bakarr Fofanah, the Chief Medical Officer Dr Brima Kargbo, and the Permanent Secretary Mr David W S Banya, for their unflinching support for the health sector reviews and the production of this HSPR. I also wish to thank the central programme directors and managers, the district medical officers and DHMT staff, and M&E officers across the MoHS for their participation in the reviews and submission of data for this report.

I also wish to thank healthcare workers across the country for their dedication: doctors, nurses, pharmacists, community health officers and assistants, community health workers, laboratory technicians, allied health professionals, and all other staff that work tirelessly to improve the health of the population every day. Without them, there would be no performance to report on, so this report is, more than anything, a reflection of their hard work.

Finally, I wish to thank all partners for their support to the health sector and our joint ambition to rebuild it following the Ebola outbreak that wreaked havoc across the country. This includes the development partners, local and international non-governmental organisations, and civil society representatives. I was particularly pleased that we were able to hear a comprehensive set of reflections on the health sector from civil society at the annual review preceding this report, and I hope that this close partnership working will continue in future years.

I have every confidence that all of us will use the findings of this report to inform strategic planning for the year ahead, and that we will continue to improve on the reporting in years to come to provide the strongest possible foundation for effective decision-making to improve health in Sierra Leone.



Dr SAS Kargbo
Director, Policy, Planning, and Information

Executive summary

2016 was a significant year for the Ministry of Health and Sanitation – the first full year of rebuilding the health system following the Ebola outbreak which devastated the country. It is also a significant year for the Health Sector Performance Report as it is the first year to include a comprehensive performance of the health sector across the majority of the WHO 100 Core Indicators, as well as key national programme indicators, together with visualisations and analysis. This **new style of reporting** provides a solid foundation on which to base data-driven decision-making and prioritisation across the health sector, as well as support high-level reflection by the top management at the Ministry.

At the **high-level impact indicator** level, Sierra Leone has shown solid improvement across maternal and child mortality over recent years – and this is excellent news that reflects the hard work of staff at the Ministry as well as the continued support of development partners. However, Sierra Leone remains near or at the very bottom in terms of performance against its peers. This is despite having a GDP/capita higher than most of its peers, and indicates that the country needs to do much better in the way it allocates its resources to maximise health benefits across the population. As decision-making becomes more data-driven and more joined-up, we expect faster and faster improvements at the impact level.

With regard to **governance and leadership**, the bulk of the strategic framework is in place, with the new National Health Sector Strategic Plan (NHSSP) and national reproductive, maternal, neonatal, child, and adolescent health (RMNCAH) strategy on track for publication in 2017. The governance arrangements for effective oversight and accountability were strengthened in 2016, for example with the resumption of the Health Sector Steering Group (HSSG), and this will continue in earnest in 2017.

On **human resources for health (HRH)**, 2016 saw a transformation in understanding the health workforce in Sierra Leone and improving health information systems related to health workers. The country has large gaps in staffing at both the peripheral health unit (PHU) and hospital levels – particularly for higher-skilled frontline health workers. Additionally, there are major discrepancies in the level of staffing between the districts and this is a major issue for equity of access to quality healthcare services. The new HRH Policy and Strategy will be launched in 2017 alongside the revamped community health worker (CHW) programme, and these will begin to address some of these issues. However, the road ahead is long and human resources for health are the backbone of the entire health system, so the Ministry will have to continue to push forwards in this area until the quality and quantity of the workforce is adequate and equitably distributed across the country.

The **supply of essential drugs and commodities** is currently undergoing reform and it is hoped that once this is complete the country will have an effective and efficient procurement and distribution system that delivers the supplies that are needed to the right health facilities at the right time. During 2016, the interim arrangements did a laudable job of supplying facilities across the country, but it was not without its challenges and performance across different drugs and commodities and across different districts was highly variable. Nonetheless, improvements were made in the health information systems underpinning the supply chain, as well as progress on the reform process itself.

Health financing data in Sierra Leone has a significant lag from collection to reporting, exacerbated by the Ebola epidemic. Accordingly, the figures presented in this HSPR are for 2013 and 2014. These show a predictable increase in donor and NGO financing from 2013 to 2014 in line with the Ebola outbreak, with a significant proportion of these funds spent on the outbreak. Unacceptably high out-of-pocket payments remain the main story for the country, and the priority going forwards will be to develop a strategic approach to health

financing that addresses this issue. The successful completion of the first performance-based financing (PBF) pilot in 2016 will support this thinking in 2017 and beyond.

2016 will certainly be remembered as a year that major progress was made in **health information systems** strengthening. Many more programmes were rolled into the national health management information systems (HMIS) platform DHIS-2; the logistics management information systems (LMIS) underpinning the supply chain were strengthened; and the integrated disease surveillance and response (IDSR) systems underpinning the detection and response to infectious disease outbreaks and other emergencies were significantly improved and were performing beyond expectations by the end of 2016. A comprehensive new health information systems strategy was also developed to support the integration and interoperability of different systems in Sierra Leone, and an ambitious plan for a new e-health hub was also put in the works. Many of these exciting initiatives will come into fruition in 2017, and both the MoHS and its partners look forward to this improvement in the quality and availability of data in the coming years.

On **health service delivery**, the available data shows that the density of health facilities is fairly constant across most of the country, with a handful of districts having significantly more or significantly fewer health facilities. On the key question of what this means for accessibility, performance across the country is far more variable with many districts having far too large a proportion of the population without access to a health facility within a reasonable distance. Going forwards, more work is needed to analyse the distribution of health facilities across the country. Combined with the analysis of the quality of health facilities from the forthcoming 2017 SARA survey, this will allow a robust assessment of where additional health facilities are needed and where existing facilities may be closed down; where patient transport needs to be strengthened, including through NEMS; and where additional CHWs need to be allocated to make up the gap in service provision.

RMNCAH remains one of, of not the priority area for the country. Performance across key maternal health indicators such as coverage of antenatal care and postnatal care services remains strong, though with a slight fall from 2015 and marked variability across districts. Family planning coverage has improved, and following a dip in performance in 2015, immunisation coverage rates have once again increased in 2016. However, the key story for RMNCAH is that despite excellent coverage rates, particularly compared to its peers, Sierra Leone continues to lag far, far behind in maternal, infant, and child mortality. This points to an issue of poor quality service delivery, and this needs to be the focus of attention for the MoHS going forwards. Additionally, viewing RMNCAH outcomes as a consequence of not only service delivery but also key preventative interventions such as nutrition, water, sanitation, and hygiene (WASH), and malaria prevention will be key to developing the joined-up strategic planning necessary to reduce the number of maternal and child deaths in the country.

On **malaria**, data from 2016 shows promising improvements in malaria care – with improvements in diagnostic testing and appropriate treatment. However, on the key preventative measure of insecticide-treated net (ITN) use, there have been disappointing falls for both children under 5 and pregnant women. Prevention is not only cheaper than cure, it is also essential to reduce mortality in a country where malaria is by far the biggest killer. Another large ITN distribution is planned for 2017 that should hopefully address the supply side, but generating demand for ITNs and ensuring effective use of these, particularly for children under 5 and pregnant women, will be central to the strategy to reduce morbidity and mortality from malaria in the coming years.

TB incidence and prevalence are falling in Sierra Leone as a result of the time and funds that have been invested in this area, though mortality appears to be rising again. Case notification improved in 2016 after falling in recent years, though treatment success rate fell. Again, performance across the country was highly variable, and as with other areas the MoHS will need to investigate why and bring districts together to share challenges and best practice in

order to maximise health outcomes across all districts. Performance on **HIV/AIDS** indicators was generally good, with coverage of prevention of mother-to-child transmission (PMTCT) services and anti-retroviral therapy (ART) coverage improving, but with ART coverage especially remaining far too low. Additionally, performance was variable across the districts, with coverage indicators falling in several. Joint TB/HIV work has begun to show dividends with very encouraging performance that will contribute to lower morbidity and mortality in these groups in years to come, though of course there remains room for improvement.

Neglected tropical diseases (NTDs) were once again addressed with impressive performance on coverage of preventative chemotherapy for schistosomiasis, lymphatic filariasis, onchocerciasis, and soil-transmitted helminths. In contrast to many of the other programme areas, these coverage rates were remarkably consistent across the country and from year to year, with slight improvements made in 2016. There may well be lessons to be learned by other programmes for how this consistency is achieved.

Performance across high-level indicators for **nutrition**, whilst slightly out-of-date, indicate that the country is heading in the right direction with falling levels of stunting and wasting – which will make a significant impact not only on health outcomes but also economic growth for years to come. At the programme level, performance on treatment of children with severe acute malnutrition (SAM) remained excellent, with some of the defaulter rate being transferred to the cured rate from 2015 to 2016. Likewise, on **environmental health and sanitation** it is mostly good news, with improvements in both access to clean water and improved sanitation – though with a lot more room for improvement. The bad news story remains indoor (and outdoor) air pollution, with almost the entire country continuing not to have access to or use modern cooking fuels. The toll that this takes on child health in particular is reflected in the prevalence of pneumonia and the level of child mortality more generally.

A great deal of activity has taken place over the last year on strengthening Sierra Leone's **resilience** to infectious diseases and other public health emergencies, and the revamped IDSR system exceeded expectations in 2016. Combined with the other initiatives in this area, the MoHS is confident that Sierra Leone has the strength and depth of expertise and tools required to prevent, detect, and respond effectively to any future major events – though consistent investment and attention is required to ensure that this remains the case going forwards.

Last but not least, the **health education and health promotion** team provided a tremendous range of support to all programmes and units in their various activities during the year – from prevention of ill health, to generating demand for services, to sensitising the public to forthcoming campaigns around immunisations and other activities. Without demand for better health the supply of health services would be wasted, and so it is important to recognise the critical role played by this team.

Overall, performance is improving across the health sector and we have the hard work of staff across the MoHS as well as the support of development partners to thank for that. However, progress is highly variable across the country and across programme areas. Furthermore, there is significant potential for even greater improvements as shown by cross-country comparisons of Sierra Leone with its peers. Two of the major aspects of this will be addressing the quality of care issue in the country, and engaging in more joined-up thinking and planning across the health sector to maximise the synergistic effects of different programme areas on improving health outcomes across the country and across the life course. The MoHS is confident that it can take these lessons learned forwards and deliver even stronger performance in the year ahead.

Introduction

Aim

The overarching aim of the Health Sector Performance Report (HSPR) is to report on the performance and progress of the health system of Sierra Leone in improving health outcomes for Sierra Leoneans.

Objectives

The primary objectives of the 2016 HSPR are to:

- Describe key quantitative indicators of health sector performance at the impact level, and provide an analysis of the trend in performance of Sierra Leone over time and comparative to similar countries.
- Describe the key quantitative indicators across the health system pillars and priority health thematic areas, and provide an analysis of the trend in performance over time, and the breakdown of performance at the district level.
- Provide a narrative report on the activities undertaken to strengthen the health system pillars and priority health thematic areas, as well as the challenges faced in 2016.

Insufficient data was submitted to provide an analytical report on the performance of hospitals in Sierra Leone in 2016, or the performance of District Health Medical Teams (DHMTs) against planned activities. In future years, provided that relevant indicators are included in the National Health Sector Strategic Plan (NHSSP) monitoring and evaluation (M&E) framework, it should be possible to provide this analysis at the district level. The NHSSP and M&E framework were still in progress at the time this HSPR was published.

Country context

Sierra Leone is a West African country bordered by Guinea, Liberia, and the Atlantic Ocean. The 2015 Census revealed a population of 7,092,113 spread across four administrative regions: northern province, eastern province, southern province, and Western Area. These regions are further subdivided into 14 districts comprising of 12 wards in Western Area and

152 Chiefdoms in the 3 provinces. In addition to this, the 2004 Local Government Act established 19 local councils, 5 city councils, and 14 district councils.

Sierra Leone has two seasons: the rainy season runs from May to November, with the remainder of the year comprising the dry season. This seasonality affects several dimensions of health service delivery, from the ability to deliver supplies, transport patients, and conduct M&E and supervision visits; to the transmission of malaria and other aspects of infectious diseases epidemiology.

The two major events in Sierra Leone's recent history that have shaped the present-day socio-economic context are the civil war (1991-2002) and the Ebola outbreak (2014-2015). The civil war substantially eroded human capacity in Sierra Leone, as well as causing lasting damage to the physical infrastructure of the country. The Ebola outbreak resulted in a huge and complex burden on the health system as well as causing ripple effects across the whole of society. The impact of the Ebola outbreak can be seen in part in the fall in real GDP growth from 4.6% in 2014 to -20.6% in 2015 – though this also reflects a fall in global commodity prices and other factors.

The most recent reported data on economic and human development show that in 2015, Sierra Leone had a GDP per capita of $653 per person per year, and a human development index (HDI) rank that placed the country 181st out of 187 – and therefore in the bottom 10 least developed countries in the world. It is in this context that the Ministry of Health and Sanitation (MoHS) of the Government of Sierra Leone (GoSL) is currently trying to strengthen the health sector to improve health service delivery – drawing on support from a range of development partners.

Overview of the health system

A comprehensive description of the health system in Sierra Leone can be found in the Sierra Leone Basic Package of Essential Health Services (BPEHS) 2015-2020 and the upcoming NHSSP 2017–2021. This section will provide a high-level overview.

Governance of the health system: senior management structure

The Ministry is led at the **political level** by the Minister of Health and Sanitation who reports to the Cabinet and the President, supported by 2 Deputy Ministers. The Ministry has a **professional division** led by the Chief Medical Officer (CMO) supported by 2 deputies, and an **administrative division** led by the Permanent Secretary (PS).

At the **central level**, the Ministry is divided into Directorates, with each Directorate led by a Director and the Directorate of Nursing and Midwifery led by the Chief Nursing and Midwifery Officer (CNMO). Directorates related to technical areas of health report to the CMO, and those that relate to administrative areas report to the PS. A 'health systems strengthening' (HSS) hub also sits in the Office of the CMO to support priority initiatives aimed at strengthening the health system. At the **district level**, each DHMT is led by a District Medical Officer (DMO), and each hospital is led by a Medical Superintendent.

There are several points of engagement between the Ministry and **external partners**, but a key body aimed at strengthening sector coordination is the 'Service Level Agreement (SLA) Unit'. This unit ensures that the Ministry maintains oversight of all activities being conducted by implementing partners in the health sector in Sierra Leone, thereby enabling it to carry out its stewardship role effectively.

A wide range of monthly and quarterly meetings take place across the MoHS and between partners, bringing together all relevant stakeholders to ensure effective governance of the health system. Key among these is the monthly **Health Sector Steering Group (HSSG)** meeting, chaired by the CMO or one of his deputies, which provides a high-level forum for discussion and dissemination of progress reports on priority areas.

Governance of the health system: strategic and policy context

The current **National Health Policy** (NHP) for Sierra Leone was developed in 2002 and revised in 2009. It set out the broad direction of the health sector, as well as outlining the priority health problems and technical and operational areas for the country to focus on.

Following this, the **National Health Sector Strategic Plan** (NHSSP) 2010-2015 provided a common strategic framework to guide interventions by all actors at all levels of the health system. Over this period, it shaped the strategic and operational plans of the MoHS, formalised coordination mechanisms for the participation of all stakeholders and implementers in the health sector, and informed the development of long- and medium-term expenditure frameworks and annual budgets. Both the NHP and NHSSP are currently in the process of being updated, and this work should be completed in 2017.

The **Health Sector Recovery Plan** (HSRP) 2015-2020 was developed in 2015 to respond to need for a health sector reconstruction, resilience, and recovery framework following the Ebola outbreak. It contains 5 pillars: patient & health care worker safety; health workforce; essential health services; community ownership; and information and surveillance.

The HSRP was split into two phases: the early recovery phase (**6-9 month plan**) which ran until 31st March 2016, and the recovery phase (**10-24 month plan**) which runs until the end of 2017. Through these plans, the **Presidential Priorities** for Recovery and Transition are being implemented, focusing on priority high-impact areas to restore essential health services and maintain a resilient zero cases of Ebola. These areas are:

- Key result area 1: Save the lives of 600 women and 5,000 children by 2018
- Key result area 2: Prevent, detect, and respond to epidemics and ensure zero EVD cases
- Key result area 3: Provide comprehensive care for EVD survivors

The **Basic Package of Essential Health Services** (BPEHS) was designed as the operational plan for the policy objectives of the NHSSP, including reproductive, maternal, neonatal, and child health (RMNCH); malaria, HIV/AIDS, and TB; and nutrition and environmental health and sanitation. The 2015-2020 update incorporated almost all the core interventions that were prioritised in 2010, but added issues brought to the fore by the EVD outbreak such as disease surveillance and HCW safety, as well as health issues that have become more important in recent years such as non-communicable diseases.

The key high-level policy underpinning health financing in Sierra Leone is the **Free Health Care Initiative** (FHCI) which was launched in 2010 and continues to this day. It provides for free maternal and child health services to all pregnant women, lactating mothers, and children under the age of 5, as well as malaria testing and treatment to the whole population.

There are a number of other policies, strategies, guidelines, regulations, and Parliamentary Acts that make up the governance framework of the health sector in Sierra Leone, but a full description of these is beyond the scope of this report and will be detailed in the NHSSP 2017-2021.

Structure of health care delivery

Sierra Leone has a **pluralistic health service delivery system**, comprising a large public sector and much smaller sector comprising for-profit and non-profit facilities, including those run by national and international non-governmental organisations (NGO) and faith-based organisations (FBO). Sharing of data from facilities outside the public sector is inconsistent, and therefore the contribution made by these actors may not be fully captured by this HSPR.

The structure of public sector health service delivery involves a multi-level primary, secondary and tertiary care system through which cases of increasing complexity are referred to facilities with increasing capacity.

At the base, **community health workers** (CHWs) work out in the community providing a fixed package of health promotion and health care services, as well as conducting surveillance activities. They also link with community governance structures, linking the community with the local health system.

The **primary care system** comprises three levels of progressively larger facilities with increasingly skilled HCWs. From smallest to largest, these include Maternal and Child Health Posts (MCHPs), Community Health Posts (CHPs), and Community Health Centres (CHCs). CHCs also provide basic emergency obstetric and neonatal care (BEmONC) services.

The **secondary care system** comprises district hospitals and regional hospitals that provide a comprehensive range of services, including comprehensive obstetric and neonatal care (CEmONC) services. The **tertiary care system** comprises a number of hospitals in Freetown that provide the most specialised of services in their area, e.g. paediatric care at Ola During Children Hospital; maternity care at Princess Christian Maternity Hospital; and general medicine and surgery at Connaught Hospital.

Whilst there are staffing, supply chain, and infrastructure challenges at every level (but especially at the primary care level), this structure provides a solid foundation for health service delivery in the country.

High-level impact indicators

Introduction

The ultimate goal of the Ministry of Health and Sanitation (MoHS) is to improve the health and wellbeing of Sierra Leoneans across the country. In order to achieve this, the MoHS works with partners to invest in health inputs – from staff to supplies; from infrastructure to information systems. These inputs lead to immediate outputs, such as increasing the numbers of patients seen and treated, and these outputs lead to improved health outcomes in specific areas.

Tracking progress at the input – output – outcome level is of course tremendously useful, and provides crucially important information on where the gaps are and how to prioritise resources going forwards. However, alongside this detailed analysis of activities in each sub-sector, it is also important to zoom out and look at the big picture to make sure that the investments being made in health are having the desired effect on people's lives.

The impact level shows the aggregate result of how all the different sub-sectors are performing. As an example, infant mortality depends not only on the quality of RMNCH services at health facilities, but also performance across WASH, nutrition and malaria; and maternal mortality likewise reflects performance across not only maternity services, but also nutrition and HIV/AIDS services such as the prevention of mother-to-child transmission (pMTCT). Overall life expectancy reflects performance not just across the whole health sector, but also across non-health sectors.

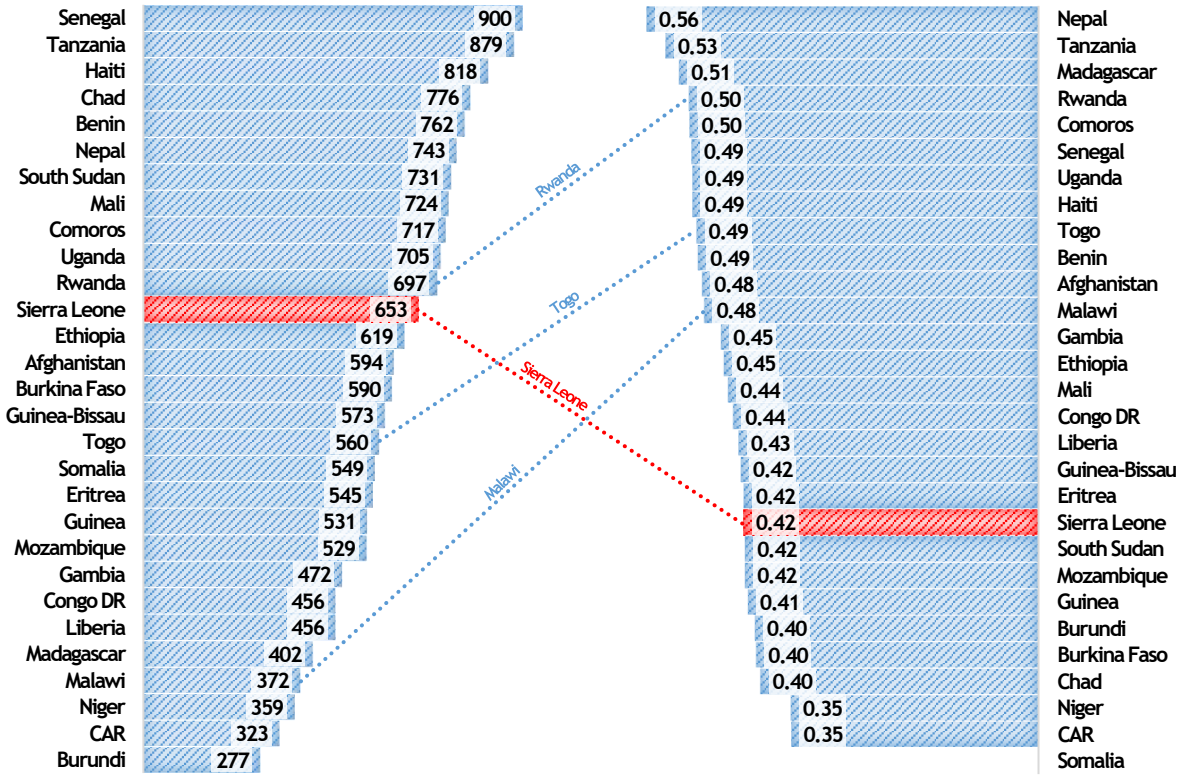
Accordingly, this year's HSPR opens with a brief look at core high-level impact indicators in Sierra Leone, their trend over recent years, and how Sierra Leone is performing as a country at this level relative to its peers. This analysis will set the stage for more detailed analysis at the health system pillar and health thematic area level in the rest of this report.

Core indicators

	Indicator	Previous estimates		Most recent estimates[1]		LDC avg	Trend	LDC* q'tile[2]
1	**Life expectancy at birth** (avg no. of years a newborn is expected to live at current mortality rates)	48.2	(UN 2010)	**51.3**	(UN 2015)	63.6	↓	Bottom
2	**Neonatal mortality rate** (probability of dying by 28 days per 1,000 live births)	40.7	(UN 2010)	**35** **39**	(UN 2015) (DHS 2013)	27.4	↓	Bottom
3	**Infant mortality rate** (probability of dying by age 1 per 1,000 live births)	107 128	(UN 2010) (MICS 2010)	**87** **92**	(UN 2015) (DHS 2013)	51.4	↓	Bottom
4	**Under 5 mortality rate** (probability of dying by age 5 per 1,000 live births)	160 217	(UN 2010) (MICS 2010)	**120** **156**	(UN 2015) (DHS 2013)	73.1	↓	Bottom
5	**Maternal mortality ratio** (deaths per 100,000 live births)	1,630 857	(UN 2010) (DHS 2008)	**1,360** **1,165**	(UN 2015) (DHS 2013)	436	↔[3]	Bottom
6	**Adolescent fertility rate** (live births per 1,000 girls aged 15-19)	133 122	(UN 2010) (MICS 2010)	**117** **125**	(UN 2015) (DHS 2013)	90.1	↔[3]	3rd
7	**Total fertility rate** (average number of children per woman)	5.2 4.3	(UN 2010) (MICS 2010)	**5.2** **4.5** **4.9**	(Census 2015) (UN 2015) (DHS 2013)	4.1	↔[3]	2nd

Data visualisations[4]

Figure 1: GDP per capita in current US$ (left) and HDI ranking (right), 2015



[1] For impact indicators, the most recent estimates include both the UN estimates for 2015 and the DHS 2013 estimates. This is because the MoHS currently uses both in its routine work and publications. For outcome and output indicators, there are no UN estimates so only the most recent programme data and/or survey data are included under 'most recent estimates', with older survey and programme data under 'previous estimates'.

[2] The LDC* comparison countries are a subset of the 'Least Developed Countries' (LDC) group of low-income economies (according to World Bank definitions) - specifically the 29 countries with a GDP / capita of <$1,000 (USD PPP). This column shows whether Sierra Leone is in the top quarter, second quarter, third quarter, or bottom quarter of countries in terms of performance across these indicators.

[3] For MMR, AFR, and TFR, whilst the UN estimates show that the rates are falling, the survey data is more equivocal. Accordingly, the trend has been marked as neither increasing nor decreasing to be on the conservative side.

[4] Source: World Bank, available at www.data.worldbank.org ; data for 2016 for these indicators were not available at the time of publication.

Figure 2: Life expectancy at birth, 2015 (left) and trend in life expectancy, 1990-2015 (right)[5]

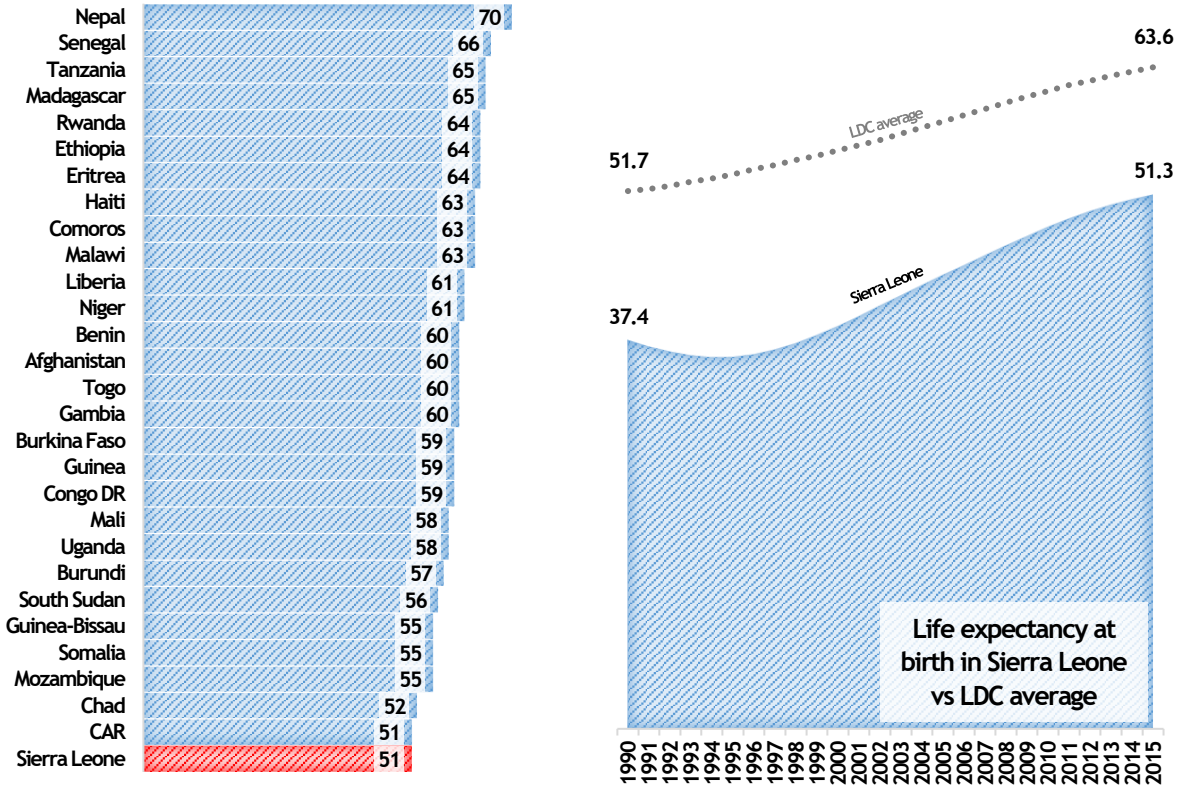
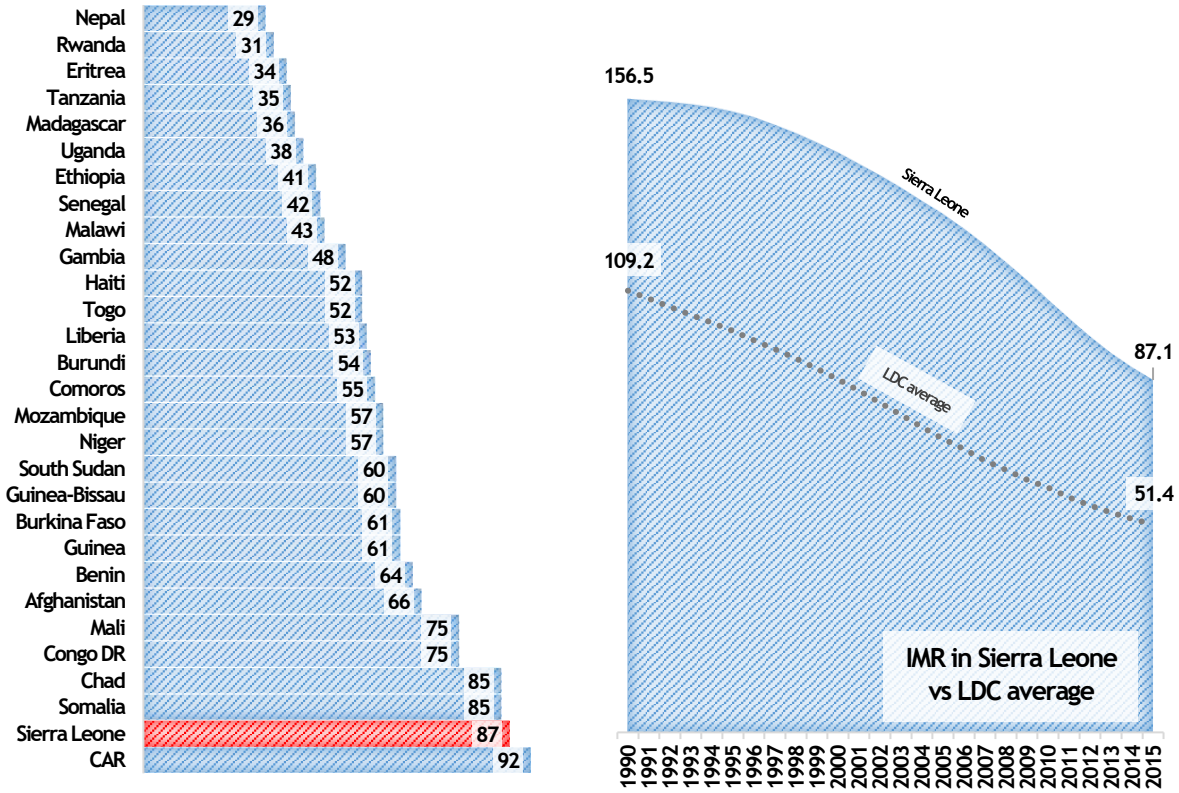


Figure 3: Infant mortality rate (IMR) per 1,000 live births, 2015 (left) and trend in IMR, 1990-2015 (right)[6]



[5] NB: whilst the cross-country analysis for each indicator shows only a subset of the LDCs (those with GDP/capita less than $1,000), the time-trend analysis shows the average performance for all LDC countries due to this being the format that data are published in.

[6] For the remaining indicators, the joint UN estimates are visualised. This is primarily because annual estimates are made for every country using a common methodology thereby allowing comparisons. However, for all of these indicators the confidence intervals are wide, and therefore they are only indicative. Survey data from DHS and MICS surveys provide additional estimates, and for recent survey years these are detailed in the table that precedes this section. The use of these data for visualisations should therefore not be seen as an endorsement of UN estimates as 'more accurate' than the survey data in any way.

Figure 4: U5 mortality rate (U5MR) per 1,000 live births, 2015 (left) and trend in U5MR, 1990-2015 (right)

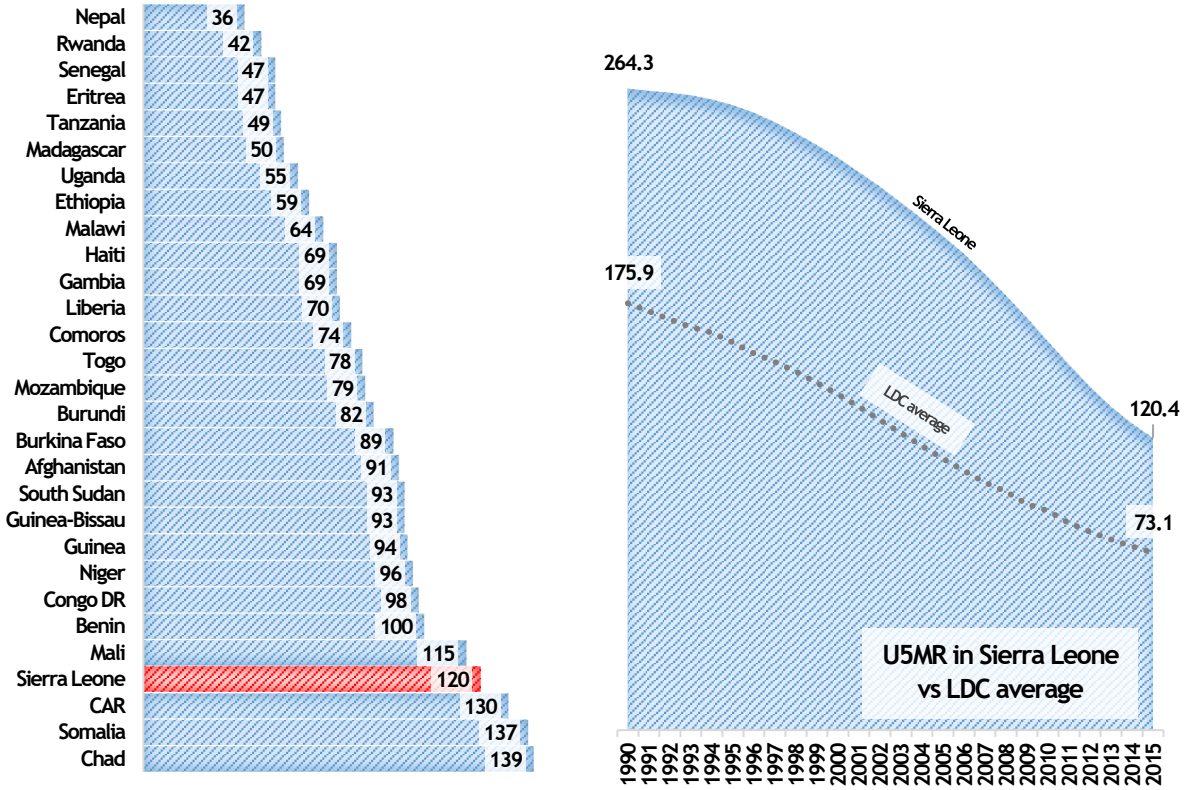


Figure 5: Maternal mortality ratio (MMR) per 100,000 live births, 2015 (left) and trend in MMR, 1990-2015 (right)

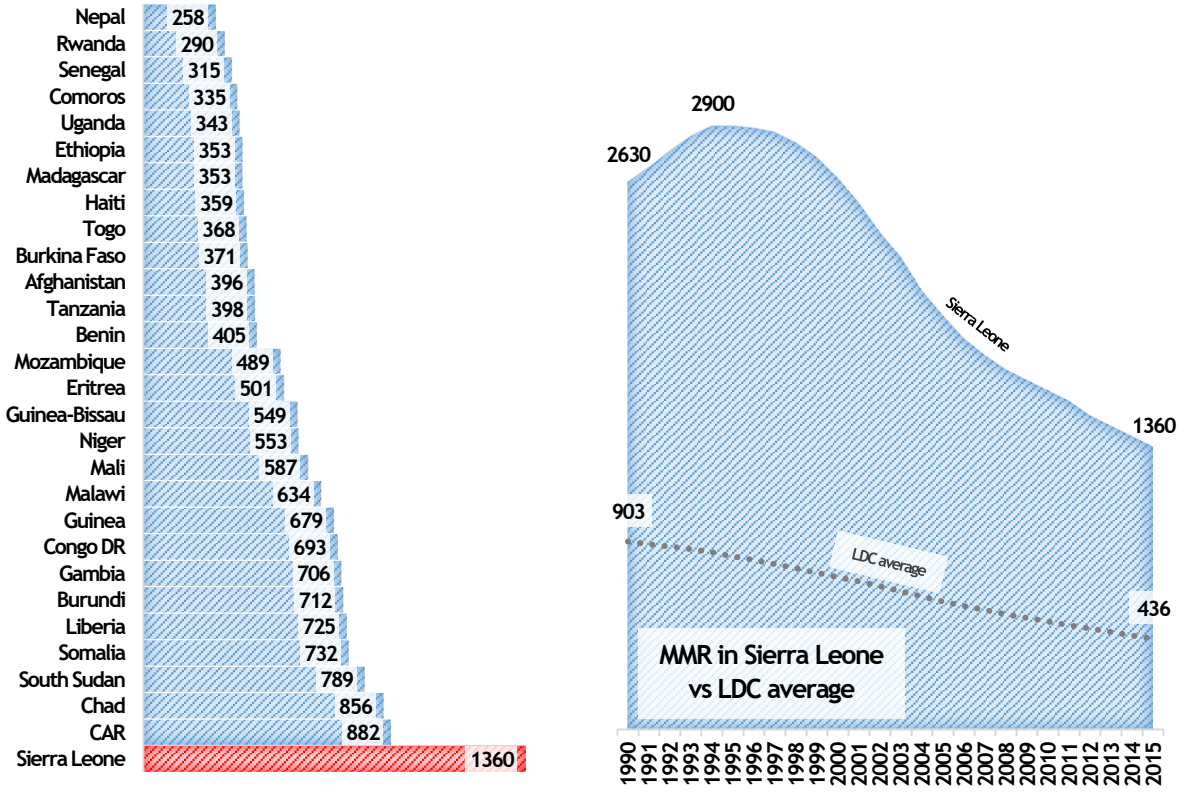


Figure 6: Adolescent fertility rate (AFR) - births per 1,000 women aged 15-19, 2015 (left) and trend in AFR, 1990-2015 (right)

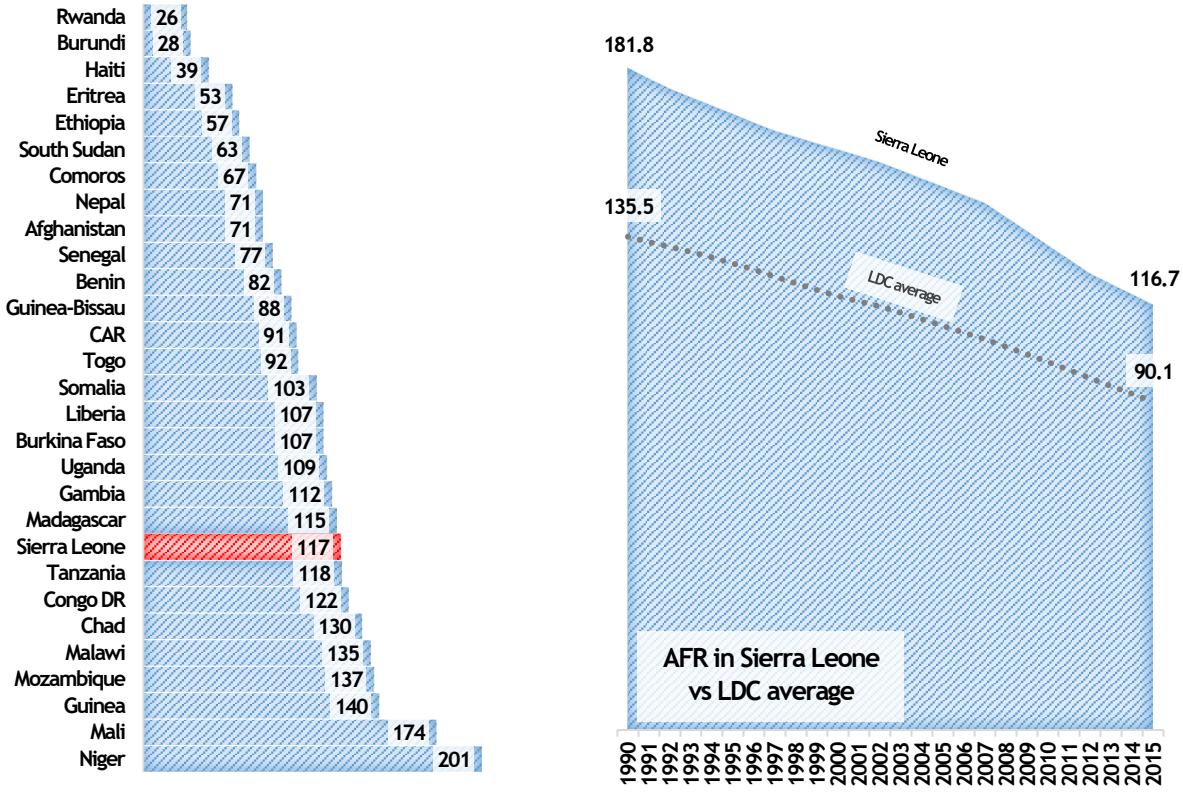
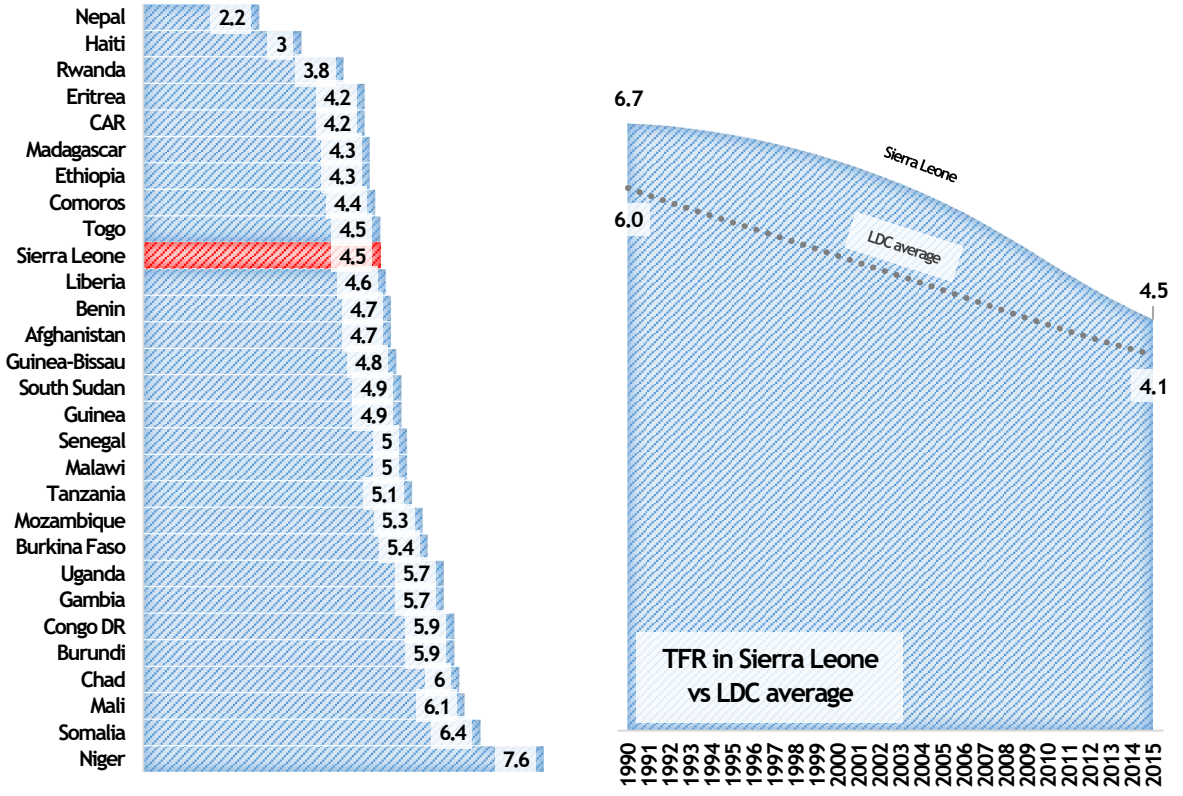


Figure 7: Total fertility rate (TFR) - births per woman, 2015 (left) and trend in TFR, 1990-2015 (right)



Summary of performance across indicators

These data tell two important stories – one good news and one bad news. First, the good news. At the impact level, Sierra Leone is improving across all impact-level indicators. This can be seen from the time trend analysis provided for each indicator, with the most recent data points for 2015 showing the best performance that the country has recorded since 1990. Notably, infant and child mortality is falling, maternal mortality is falling, births to adolescent girls are falling, and overall life expectancy is improving.

However, these data also contain a bad news story. That is that despite these improvements, Sierra Leone remains at the very bottom or near the bottom in terms of performance compared to similar countries.

When looking at the subset of least developed countries (LDCs) with a GDP per capita of less $1,000, Sierra Leone is in the top half of countries for income, but the bottom half for human development – and indicator covering health, education, and standard of living. Rwanda has a similar GDP per capita to Sierra Leone but sits 16 places higher in terms of human development. Both Togo and Malawi have a lower GDP per capita but higher human development than Sierra Leone. This suggests that Sierra Leone could use its resources more effectively, and will have to if it is to improve the health of its people.

On the health-related impact indicators, Sierra Leone ranks worst for life expectancy at 51 years, and maternal mortality at 1,360 maternal deaths per 100,000 live births. Whilst this figure is only one estimate, the next best estimate from the DHS 2013 survey of 1,165 maternal deaths per 100,000 live births would still place Sierra Leone at the bottom of this list. This must give the country pause for thought when analysing the output and outcome level indicators – for example, if there is good coverage for maternity care services such as antenatal checks and births attended by a skilled HCW, then there must be an issue with the quality of care that needs to be investigated and addressed.

On child mortality, Sierra Leone ranks 2nd from the bottom on infant mortality with the most recent estimate showing 87 deaths in the first year of life per 1,000 live births, and 4th from the bottom on under-5 mortality with 120 deaths per 1,000 live births. The same question as for maternal mortality must be asked: what is the missing link between high coverage of child health interventions and the high mortality. Taking a more holistic and integrated view of child health outcomes in relation to nutrition, WASH and environmental health, and malaria programming amongst other areas will be key to reducing child mortality in years to come.

The adolescent fertility rate, which shows the number of births per 1,000 women, has also been constantly improving, and Sierra Leone ranks 9th from bottom on this indicator. Further improvements, driven by multi-sectoral action, will contribute to driving down maternal mortality as well as improving the quality of life for young women in Sierra Leone. Likewise, the total fertility rate is falling, and this is the only impact indicator where Sierra Leone is in the top half of performers. This reflects good performance in family planning, as well as economic development, livelihoods, social development, gender inequality, and other areas.

In summary, whilst Sierra Leone is moving in the right direction, and has made strong improvements in recent years, it still has a long road ahead to catch up to its peers. Countries with the poorest performance often have 'low-hanging fruit' that, if effectively targeted, can lead to rapid improvements over relatively short periods of time. The Ministry of Health and Sanitation will continue to target these high-impact, cost-effective areas in the coming years to try and make substantial and sustainable improvements in health outcomes for the population.

Pillar 1: Governance and leadership

Introduction

Leadership and governance in health are broad terms that do not always have a common understanding across stakeholders, and are rarely adequately monitored or evaluated. Nonetheless, there is unanimous agreement on the importance of these themes for improving the health of the population, both within MoHS and in the wider development partner community.

The WHO defines leadership and governance in building a health system as ensuring that strategic policy frameworks exist and are combined with effective oversight, coalition-building, regulation, attention to system design, and accountability. Viewed in this way, it is clear that leadership and governance are cross-cutting themes that span every other health system pillar and thematic area covered in this report.

This chapter provides an overarching view of progress in key areas related to leadership and governance related to the health system in Sierra Leone in 2016. The WHO proposes core indicators for leadership and governance separately from its 100 Core Indicators publication, and it is these that are included here.

In future years, broader indicators around governance may be included, such as number of Health Sector Steering Group (HSSG) meetings, Top Management Group (TMG) meetings, and other key meetings held with minutes disseminated. These will allow the MoHS to provide a more comprehensive account to the people and partners for governance in the health sector.

Core indicators

	Indicator	Current strategy / policy	End date
1	**National health strategy**	National Health Sector Strategic Plan (NHSSP) 2010 - 2015 **NHSSP 2017 - 2021 under development*	**2015**
2	**National medicines policy**	Sierra Leone National Medicines Policy 2012	**-**
3	**Medicines procurement policy**	N/A	**N/A**
4	**National TB policy / strategy**	National Leprosy and Tuberculosis Strategic Plan 2016-2020	**2020**
5	**National malaria policy / strategy**	Sierra Leone Malaria Control Strategic Plan 2016-2020	**2020**
6	**National HIV / AIDS policy / strategy**	Sierra Leone National Strategic Plan on HIV / AIDS 2016-2020	**2020**
7	**National reproductive health policy / strategy**	Sierra Leone Reproductive, Newborn, and Child Health Strategy 2011-2015 **RMNCAH strategy 2017-2021 under development*	**2015**
8	**National comprehensive multi-year plan for childhood immunisations**	Comprehensive EPI Multi-Year Plan 2012-2016	**2016**
9	**Key health sector reports that are disseminated regularly**	Annual Health Sector Performance Reports: 2015; 2016 DPPI quarterly bulletins National weekly epidemiological bulletins	**N/A**
10	**Surveys for obtaining client input on health services**	N/A **KAP survey from service users planned for 2017*	**N/A**

Key highlights from 2016

As discussed, leadership and governance span a broad range of actions and activities, and accordingly a full reporting of these is beyond the scope of this report. Work undertaking on developing new sub-sector strategies are described in the relevant chapters, and this area of work will be described more fully in the upcoming NHSSP 2017-2021. Therefore, this section will be present only key highlights related to leadership and governance in 2016.

High-level meetings

Key internal high-level meetings took place regularly throughout 2016 to ensure effective oversight and smooth running of the MoHS, from central to district level. These included Top Management Group (TMG) meetings; Director's meetings; and DMO's meetings. These perform a critical role in ensuring that senior leaders across the health system are kept appraised of future developments and are provided an opportunity to feed into strategic decision-making across the health sector, as well as providing a forum for escalating issues and challenges at the Directorate or District level to the CMO and TMG for action.

After a hiatus from meeting regularly, the Health Sector Steering Group (HSSG) was also re-established as a routine forum that brings together representatives from across the development partner and implementing partner communities with leaders in the MoHS to provide updates, inputs, and feedback on activities taking place across the health sector. Re-starting the HSSG meeting as a regular forum will make a significant contribution to strengthening health sector governance going forwards.

The President's Recovery Priorities (PRPs)

As described earlier, the PRPs in health were developed in order to focus action on priority areas to rebuild the health sector and maintain zero Ebola cases following the Ebola Virus Disease (EVD) outbreak. They are fully integrated with the work of the Ministry, with the Honorouble Minister himself the sector lead; the CMO taking the role of the MDA lead; and DCMO1 Dr Sarian Kamara leading on maternal and child health and DCMO2 Dr Amara Jambai leading on resilient zero. They were supported by the Presidential Delivery Team (PDT) to track and report on progress made by MoHS in these areas in 2016.

For Key Result Area 1 (KRA 1) – saving the lives of 600 women and 5,000 children by 2018 – the status at the end of 2016 was:

- 3 / 6 targets are expected to be fully met by June 2017: to increase the capacity of community health workers (CHWs); to reduce teenage pregnancies; and to develop a National Emergency Medical Services (NEMS).
- 2 / 6 targets are expected to be substantially met by June 2017: to strengthen the supply chain, and to improve emergency obstetric services.
- 1 / 6 targets is expected to only be minimally met by June 2017: to expand human resources for health.

For KRA 2 and 3 – preventing, detecting, and responding to epidemics and ensuring zero cases of EVD, and providing comprehensive care for EVD survivors – the status at the end of 2016 was:

- 4 / 5 targets are expected to be fully met by June 2017: to strengthen data systems; to strengthen IDSR; to improve community sanitation; and to provide comprehensive care to EVD survivors.
- 1 / 5 targets is expected to be substantially met by June 2017: to improve IPC / WASH.

Further details on the activities implemented by MoHS to achieve these targets, as well as the challenges encountered, are provided in the relevant chapters.

Health Systems Strengthening (HSS) unit

In 2016, the old 'HSS hub' which was staffed by 6 international consultants and 12 local staff was transitioned to the 'HSS unit', fully within the MoHS as part of the Office of the CMO. The role of the HSS unit covers assessment and monitoring; technical leadership and advisory services; programme and grant management; and coordination and cross-team collaboration.

It is currently early days for the new HSS unit, with Dr Francis Smart in the role of HSS manager in 2016 and Dr Kwame O'Neill taking over in 2017. It plays an important role in facilitating and driving forwards key MoHS initiatives such as NEMS, as well as acting as the key point of liaison with a number of donors such as the Global Fund. As the capacity of the unit increases, it will be able to perform a cross-cutting support role to move MoHS priorities forwards.

Service Level Agreement (SLA) unit

The SLA unit was set up to improve accountability in the use of funds by development partners in the health sector in Sierra Leone in line with best practice as described by the Paris Declaration on Aid Effectiveness, the Accra Agenda for Action, the International Health Partnership (IHP+), and similar initiatives.

To date, the SLA unit has received 175 completed SLAs, 146 have been approved, and 25 have been recommended for resubmission. All SLAs submitted were reviewed within the agreed 6-week period, with 98% submitted and reviewed with an outcome letter within 7 days. The list of approved projects continues to be updated on www.health.gov.sl. Based on the SLAs received so far, the total amount being spent by aid agencies on health is $129.5m.

The SLA unit has also engaged in consultative meetings and joint monitoring exercises throughout 2016, reporting back to the MoHS. They are also pushing forwards with strengthening the approach to programme monitoring through ensuring that each project implementer conducts at least 2 community engagement meetings during the life of a project; and refining data management tools to enhance data collection and reporting.

The unit continues to have challenges engaging with development partners, and negotiations with DFID over SLAs for the Saving Lives Programme were still ongoing at the end of 2016. Despite this, steady progress is being made, and the unit continues to make a key contribution to accountability and coordination in the health sector.

Pillar 2: Human resources for health

Introduction

The WHO notes that the ability of a country to meet its health goals depends largely on the knowledge, skills, motivation, and deployment of the people responsible for organising and delivering health services. These people are, of course, health workers – from frontline health care workers (HCWs) such as doctors, nurses, midwives, and pharmacists, to management and support staff who are essential to the effective functioning of the whole system.

The lack of human resources for health is a major contributor to the poor health outcomes seen in Sierra Leone. There are many reasons for this, from limited funding, to limited production capacity for higher-skilled cadres, to migration within and out of Sierra Leone, to a poor mix of skills and distribution of health workers across the country.

Strengthening the health workforce, or 'human resources for health' (HRH), is therefore a key priority for the Ministry. Strengthening HRH covers a wide range of areas, from pre-service training and deployment, to managing the current workforce and ensuring ongoing in-service training and support for all cadres of HCWs. Part of this work is carried out by the Directorate of Human Resources for Health (DHRH), with one major component - the Community Health Worker (CHW) programme – carried out by the Directorate of Primary Health Care (DPHC). However, as a critical systems-wide issue, each and every single Directorate, Programme, and DHMT engages in this area of work.

This chapter will present the performance of the health sector across key HRH indicators, followed by a summary of HRH-related activities in 2016, the challenges faced, and a brief look forwards to 2017.

Core indicators

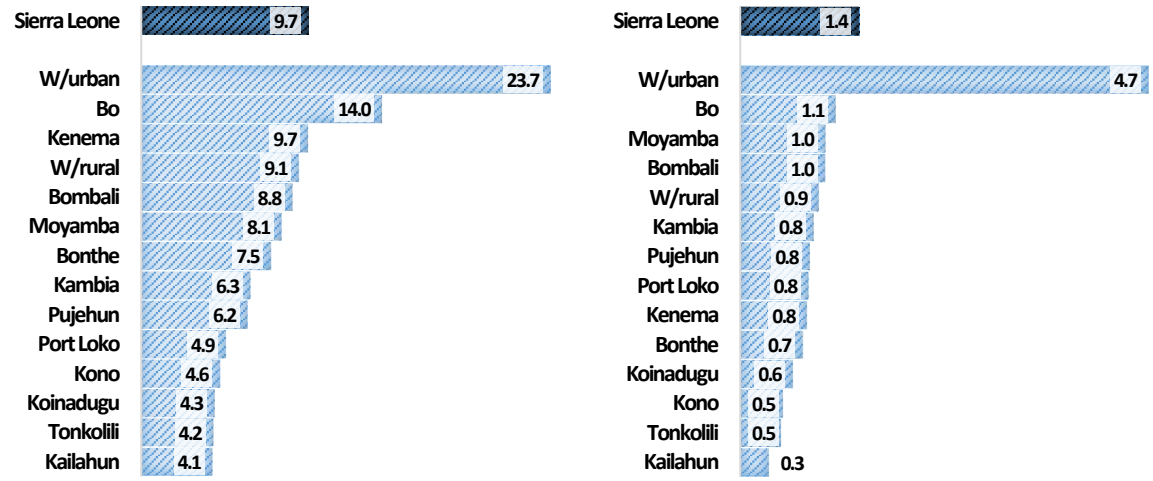
	Indicator	Prev. estimates		Most recent estimates		Trend
1a	**Frontline health workers per 10,000 population**[7] (number of frontline health workers per 10,000 pop.)	N/A	N/A	**9.7**	DHRH 2016	**N/A**
1b	**Doctors, nurses (higher cadres), and midwives per 10,000 population** (number of staff in these cadres per 10,000 pop.)	N/A	N/A	**1.4**	DHRH 2016	**N/A**
1c	**Doctors per 10,000 population** (number of doctors per 10,000 population)	N/A	N/A	**0.18**	DHRH 2016	**N/A**
1d	**CHOs and CHAs per 10,000 population** (number of CHOs / CHAs per 10,000 pop.)	N/A	N/A	**0.6**	DHRH 2016	**N/A**
1e	**Nurses (higher cadres) per 10,000 population**[8] (number of higher cadre nurses per 10,000 pop.)	N/A	N/A	**0.6**	DHRH 2016	**N/A**
1f	**Midwives per 10,000 population** (number of midwives per 10,000 pop.)	N/A	N/A	**0.4**	DHRH 2016	**N/A**
2a	**Medical graduates per 10,000 population** (number of new medical graduates per 10,000 pop.)	N/A	N/A	**0.06**	DHRH 2016	**N/A**
2b	**CHO and CHA graduates per 10,000 population** (number of new CHOs and CHA graduates per 10,000 pop.)	N/A	N/A	**0.36**	DHRH 2016	**N/A**
2c	**Nursing (higher cadres) graduates per 10,000 pop** (number of new nursing graduates per 10,000 pop.)	N/A	N/A	**0.22**	DHRH 2016	**N/A**
2d	**Midwifery graduates per 10,000 population** (number of new midwifery graduates per 10,000 pop.)	N/A	N/A	**0.18**	DHRH 2016	**N/A**

Supplementary indicators

	Indicator	Prev. estimates		Most recent estimates		Trend
1	Total salaried health workforce	N/A	N/A	9,910	DHRH 2016	N/A
2	Salaried frontline health workforce	N/A	N/A	7,107	DHRH 2016	N/A
3	Estimated unsalaried workforce	N/A	N/A	9,120	DHRH 2016	N/A
4	Estimated unsalaried frontline health workforce	N/A	N/A	3,690	DHRH 2016	N/A
5	Total est. health workforce, including unsalaried staff	N/A	N/A	19,030	DHRH 2016	N/A
6	Total estimated frontline health workforce including unsalaried staff	N/A	N/A	10,797	DHRH 2016	N/A
7	Number of community health workers (extra to above)	N/A	N/A	15,000	DHRH 2016	N/A

Data visualisations

Figure 8: Frontline health workers per 10,000 population, 2016 (left) and doctors, nurses (higher cadres), and midwives per 10,000 population, 2016 (right)



[7] Source: numerator: number of each cadre of health worker, DHRH; denominator: population projections calculated using CAGR from Census 2004 and Census 2015. 'Frontline health workers' include all cadres except administrative staff, M&E officers, nursing aides, and support staff as per the definition used by DHRH. All the indicators in the core indicators table look at salaried health workers only.
[8] Higher cadres of nurses are taken to include the following cadres: mental health nurse, nurse anaesthetist, nurse specialist, nurse tutor, nursing officer, ophthalmic nurse, and SRN.

Figure 9: Doctors per 10,000 population, 2016 (left) and CHOs / CHAs per 10,000 population, 2016 (right)

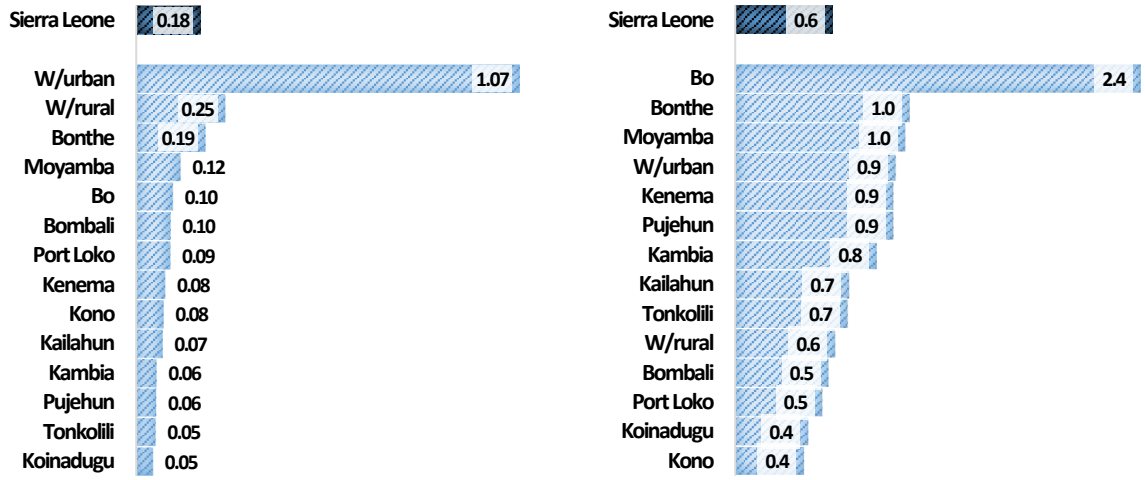


Figure 10: Nurses (higher cadres) per 10,000 pop, 2016 (left) and midwives per 10,000 pop, 2016 (right)

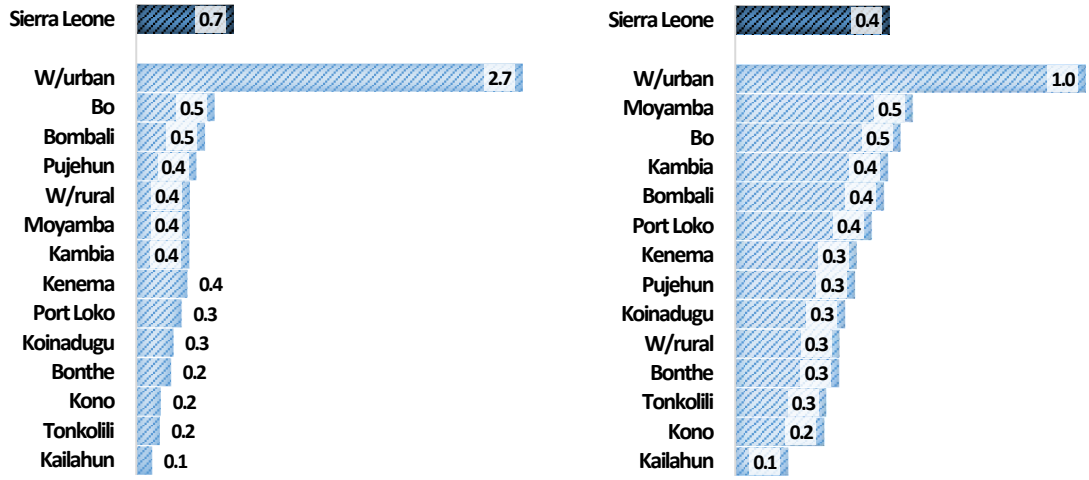
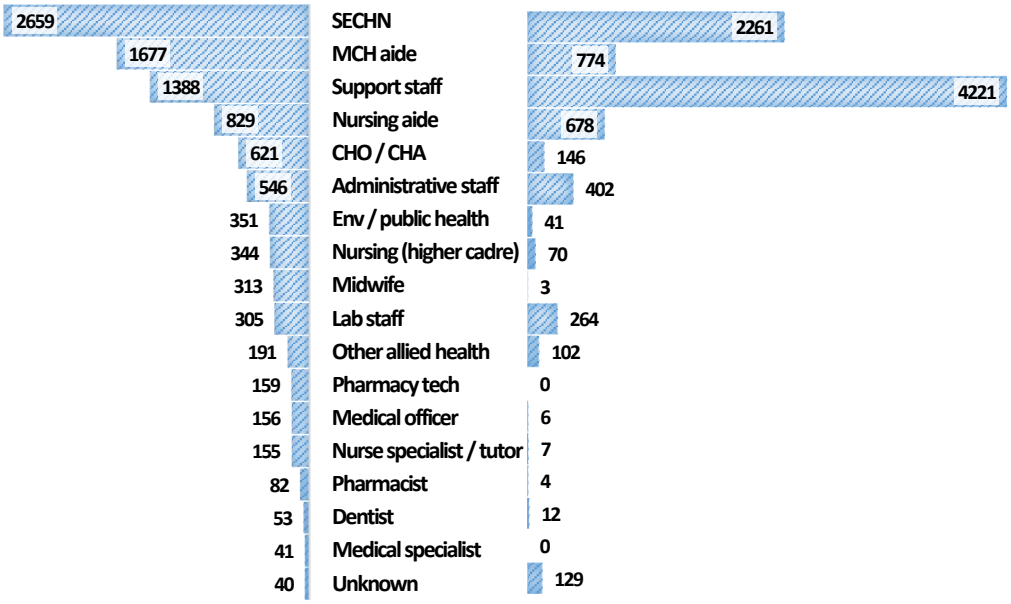


Figure 11: Salaried workforce (left) and unsalaried workforce (right) by cadre, 2016



Summary of performance across indicators

There are two main stories that emerge from these data. The first is that Sierra Leone has a paucity of health workers relative to the level of need, and the second is that there is a wide disparity in the density of health workers across the country, and in particular between Western Area Urban and the rest of the country.

The paucity of health workers exists across all cadres, but is felt particularly strongly at the level of highly skilled frontline health workers: doctors, state registered nurses (SRNs), and midwives. Whilst the WHO norms are generally recognised to have limited usefulness for Sierra Leone, comparing Sierra Leonean staffing levels to these norms is illustrative. The most recent 'SDG-index' threshold set in 2016 is 44.5 doctors, nurses, and midwives per 10,000 population. Taking only higher cadre nurses, Sierra Leone has only 1.4 doctors, nurses and midwives per 10,000 population – significantly lower than the norm – and adding together all possible frontline health staff the figure is still only 9.7 per 10,000 population. The previous 'critical' threshold to provide the minimum level of basic skilled care for pregnant women and children set by the WHO in 2006 was 23 doctors, nurses, and midwives per 10,000 population – still a long way away from what is seen in Sierra Leone.

Unfortunately, the most recent data from comparator countries dates back to 2008, so it is not possible to conduct useful comparative analysis. However, a full analysis of the human resources for health situation in Sierra Leone with respect to the BPEHS 2015-2020 norms is provided in the Human Resources for Health Country Profile, and has been used to inform the new Sierra Leone HRH Strategic Plan 2017-2021. Accordingly, readers are referred to that document for further discussion.

With regard to the second main story – the visualisations clearly show a substantial geographic disparity across all cadres in favour of Western Area Urban, and in the case of CHOs and CHAs in favour of Bo. At the aggregate level, the density of frontline health workers in Western Area Urban is more than double that in any district other than Bo, and is almost six times that in the least densely staffed districts of Kailahun, Tonkolili, and Koinadug. This disparity is exacerbated when looking only at doctors, nurses (higher cadres), and midwives where Western Area Urban has a density almost 15 times higher than Kailahun.

This is a major issue – as clearly without adequate staff it will not be possible for these districts to deliver effective health care, and it is not within the gift of district staff to address this issue due to the centralisation of human resources arrangements in Sierra Leone. Accordingly, DHMTs are being penalised for circumstances outside of their control, and patients in these rural districts are being provided an inequitable allocation of resources.

As a final note, the size of the unsalaried workforce is highlighted in figure 11. This shows that for cadres such as support staff, SECHNs, MCH aides, and nursing aides, there are very large numbers of unsalaried staff in the health system. Additionally, on a proportional basis unsalaried staff make an important contribution across most cadres, even at the doctor / dentist and higher cadre of nursing levels. All the issues highlighted in this section will be taken up through the forthcoming HRH policy and strategy.

2016 saw the only inception phase of the refreshed community health worker (CHW) programme, and there are therefore no indicators to report on from 2016. In future years, CHW performance monitoring could be integrated into broader reporting on HRH and included in this chapter.

Key activities relating to HRH in 2016

This section will provide an outline of the key activities related to HRH that took place in 2016. A more comprehensive description is available from the DHRH annual report and the CHW hub annual report. As mentioned in the introduction, every directorate, programme, and district engages in health worker training – a central pillar of strengthening HRH – but those activities are covered in the relevant chapters.

Payroll audit and health worker census

DHRH led a nationwide facility-level data collection effort to audit the MoHS payroll in early 2016. Data collection teams visited more than 1,300 workstations nationwide and conducted interviews and administered surveys to approximately 22,000 HCWs, approximately half of whom were unsalaried.

As a result of the payroll verification exercise, 756 'unverified' HCWs were removed from the MoHS payroll, and after requests for reinstatement were processed by the revived payroll steering committee, 427 remained permanently removed from payroll. This resulted in a monthly saving of SLL 586,273,273 / US$ 97,712 which translates into an annual saving of approximately SLL 7bn / US$ 1.2m.

Improving attendance monitoring tools

DHRH led an update of the attendance monitoring system (AMS) aimed at providing an accurate, complete health worker payroll database; a more robust district health worker monitoring tool through the development of a single electronic database; and strengthening attendance. The planned full roll-out is for May 2017.

Updating the new integrated Human Resources Information System (iHRIS)

As of September 2016, the new iHRIS system is fully populated with records for health workers in all districts, including separate instances for unsalaried workers. The new system contains a broad range of HCW data including PIN, NASSIT number, next of kin, qualification, date of first and current appointment, address, phone number, and a head shot. This will enable better data-driven workforce planning and decision-making.

Going forwards, DHRH will integrate the Ebola response worker's database and the CHW database within iHRIS to harmonise HRH data across the health sector.

The HRH Summit

From June 2-3, the MoHS convened the HRH Summit in Freetown, bringing together 190 participants from over 10 different countries, with speakers sharing their national HRH experiences from Liberia, Ethiopia, Zambia, Malawi, and Ghana. This provided a platform for sharing best practices, and was used to kick-start the policy process to refresh Sierra Leone's HRH policy and strategy.

Development of the HRH Policy and Strategy 2017-2021

The HRH policy and strategy process was launched in June 2016, and was designed from the outset to be heavily consultative. The HRH country profile was updated to support the development of the strategy, and an inter-ministerial coordinating committee was instituted under which three technical working groups (TWGs) were convened: education, regulation and service delivery; financing and HR planning; and management and leadership.

The work of these TWGs fed into the HRH strategy consolidation workshop held in September 2016, and these were followed by regional consultation workshops across the country in November 2016. As of December 2016, the zero draft of the strategy was underway and the process was on track for a Q1 / Q2 2017 launch.

Induction workshops to train HCWs on civil service functions

DHRH completed a 5-day induction workshop in the Eastern Province on their responsibilities under the civil service code. This was attended by 125 HCWs, and depending on funding is planned for a wider roll-out to all HCWs.

Development of 2017-2019 manpower plan

DHRH submitted evidence for the 2017-2019 manpower plan and budget to the Human Resource Management Office (HRMO). This drew on all of the analytical work conducted in 2016 and outlined above, as well as the Presidential Recovery Plan targets, and made provision for the recruitment of 2,850 HCWs, including: 70 midwives, 80 SRNs, 1,200 SECHNs, and 1,400 MCH aides. The plan was defended at HRMO and approved by MoFED.

CHW Policy revision

Prior to 2012, various MoHS and implementing partner programmes had their own community-level service providers. In 2012, the first national policy was launched to harmonise and coordinate these initiatives, and proposed key CHW roles:

- Community sensitisation on behaviour change
- Home visits to pregnant and lactating mothers
- Diagnosis and treatment of malaria, diarrhoea, and pneumonia
- Screening and referral for children with acute malnutrition
- Reporting births and deaths

Following reflections on the implementation of the 2012 policy and the EVD outbreak, the 2016 CHW policy revision, conducted under the leadership of the CHW Hub in DPHC, made key revisions to the CHW role:

- Expanded scope of work to include community-based surveillance (CBS), TB and HIV sensitisation, and family planning
- A new supervision structure that focuses on the quality of service delivery and beyond just data collection and reporting
- A revised training curriculum focusing on basic skills transfer and retention; and a standardised approach to refresher training
- The addition of financial incentives
- A focus on equal access, with 1 CHW to 250 people in hard-to-reach areas (>3km from a health facility or difficult to access) and 1 CHW to 1,000 people in easy to reach areas

As of December 2016, geo-mapping of approximately 15,000 CHWs had been completed; training of master trainers had commenced with 36 master trainers; and a workshop on CHW selection was completed with DHMTs with microplanning underway. The 2017 HSPR will provide the first updates on the successes and challenges of the CHW programme following roll-out in 2017.

Key challenges in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- HRH-related planning was not sufficiently evidence-based, data-driven, or consultative. In particular, there was limited coordination between national level stakeholders within and outside the Government of Sierra Leone (GoSL). Personnel monitoring was also impeded by weak records management at the district and central levels, leading to lack of clear information on the size and location of the workforce. There were also competing priorities between the recruitment of low and higher cadre workers.
- Lack of clarity on the deployment and transfer process, with limited data, poor communication between district and national levels, and lack of orientation for new workers.
- Performance appraisals not fully rolled out and a lack of enforcement of the sanctions framework due to a historical lack of evidence on which to base sanctions decisions.
- Focus of health workforce in urban areas and hospitals, due to inadequate working and living conditions in rural areas e.g. around accommodation and transport. This was also affected by the financial disincentives associated with remote placements in the absence of relocation allowances.

- Weak infrastructure for the maintenance and use of information systems, e.g. internet and printer ink. Other challenges with the use of information systems include a lack of processes on how to keep databases up to date; poor record keeping; and low interoperability of documents.
- Highly centralised HR management, with MoHS lacking the mandate to manage its payroll independently and all leave applications having to go through multiple central processes.
- Inconsistent and insufficient remuneration for health workers, with health workers often not knowing the compensation they're entitled to and remuneration not necessarily reflecting the grade and level of training. There is also the longstanding issue of harmonisation of pay between technical and administrative HCW grades.
- Challenges with recruitment and management, with lack of clarity on the hiring freeze by GoSL and unavailability of funding leading to uncertainty and delays.
- In relation to the CHW programme, funding and sustainability remain challenges, as well as ensuring the supply of medications and other supplies to enable CHWs to carry out their roles effectively.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed activities and actions for 2017 relating to HRH include:

- Strengthening workforce planning and management through better use of evidence, data, and health information systems; better communication across all levels of MoHS; and stronger financial management and analysis.
- Strengthening pre-service and in-service training, including developing a long-term national training plan and revising the scopes of practice; strengthening training around infection prevention and control (IPC); and improving monitoring of training programmes.
- Strengthening management of HRH at the central level and district level, including through the deployment of district HR officers, as well as strengthening attendance monitoring and sanctions enforcement.
- Improving health worker retention through a broad package of initiatives and better communication and clarity for HCWs on their roles, responsibilities, and career progression.
- Improving the legislative, regulatory, policy, and governance framework for HRH, including strengthening collaboration between the broad range of stakeholders across GoSL and external partners with critical roles in improving the HRH situation in Sierra Leone.
- For the CHW programme, intensifying the focus on implementation, including: the roll-out of the policy and strategy; ensuring incentives are regularly paid; renewing the focus on the supply chain and incorporating CHW data into national quantification and distribution; and focusing on long-term sustainability of the programme, including advocating for GoSL contributions.

Pillar 3: Essential drugs and commodities

Introduction

A well-functioning health system is one that ensures equitable access to essential medicines, vaccines, and commodities of assured quality, safety, efficacy, and cost-effectiveness; as well as their appropriate use. This requires a range of activities to be undertaken, including:

- The development of national policies, standards, guidelines, and regulations.
- Ensuring the availability of information on prices, and the capacity to set and negotiate prices in the context of relevant actors and policies, both local and global.
- Quality assessment of products, eventually leading to the development of reliable manufacturing practices for the development of products in-country.
- Procurement, supply and storage, and distribution systems that minimise leakage and other waste.
- Support for the rational use of medicines, commodities, and equipment, through guidelines, strategies, and training to assure adherence, reduce resistance, and maximise patient safety.

The Directorate of Drugs and Medical Supplies (DDMS) is tasked with leading progress in this area, under the overall leadership of the Minister of Health and Sanitation. Sierra Leone is currently transitioning its systems in this area, and therefore many of the areas listed above are in a nascent stage. What is certainly true, however, is that poor availability of key medicines and commodities remain impediments to delivering quality care, and therefore make a major contribution to morbidity and mortality in Sierra Leone. The reform process being undertaken will hopefully tackle these issues in the coming years, thereby resulting in a strong 'drugs and commodities' pillar underlying the health system.

This chapter will outline performance across key indicators related to essential medicines, highlight the major activities and challenges faced by DDMS in 2016, and provide a brief look forward to 2017.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	**Health facilities reporting no stock-out of key tracer drugs and commodities** (% of health facilities reporting no stock-out)					
1a	■ **Oral rehydration solution (ORS)**	72%	DHIS-2 2015	**75%**	DHIS-2 2016	↑
1b	■ **Zinc**	20%	DHIS-2 2015	**23%**	DHIS-2 2016	↑
1c	■ **Oxytocin injection**	71%	DHIS-2 2015	**75%**	DHIS-2 2016	↑
1d	■ **Magnesium sulphate**	82%	DHIS-2 2015	**78%**	DHIS-2 2016	↓
2	**Timeliness of LMIS reporting** (% of health facilities reporting LMIS data on time)	79.4%	DHIS-2 2015	**72.7%**	DHIS-2 2016	↓

Data visualisations

Figure 12: Reporting of no stock-out of ORS, 2015 (left) and 2016 (right)

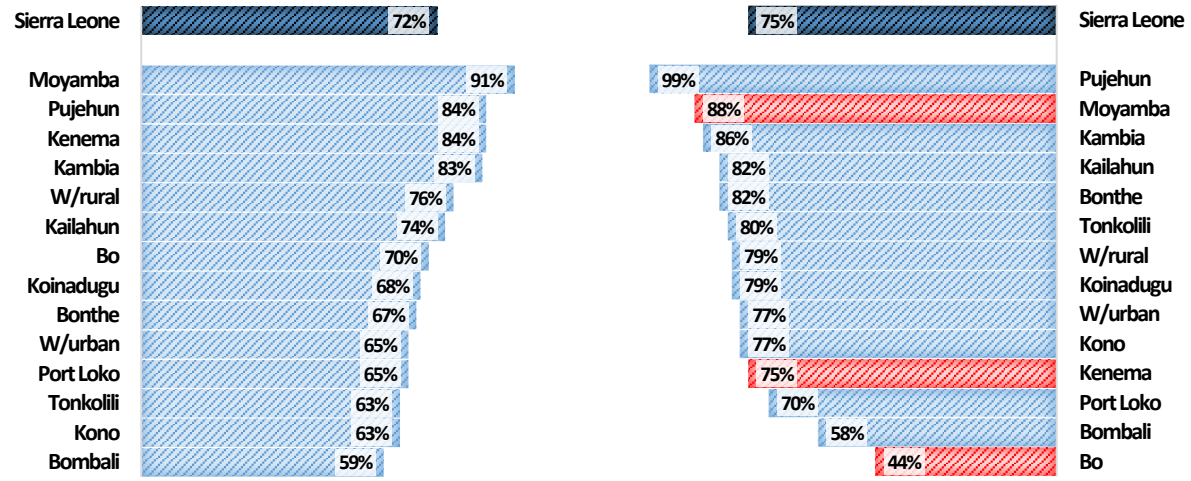


Figure 13: Reporting of no stock-out of zinc, 2015 (left) and 2016 (right)

Figure 14: Reporting of no stock-out of oxytocin, 2015 (left) and 2016 (right)

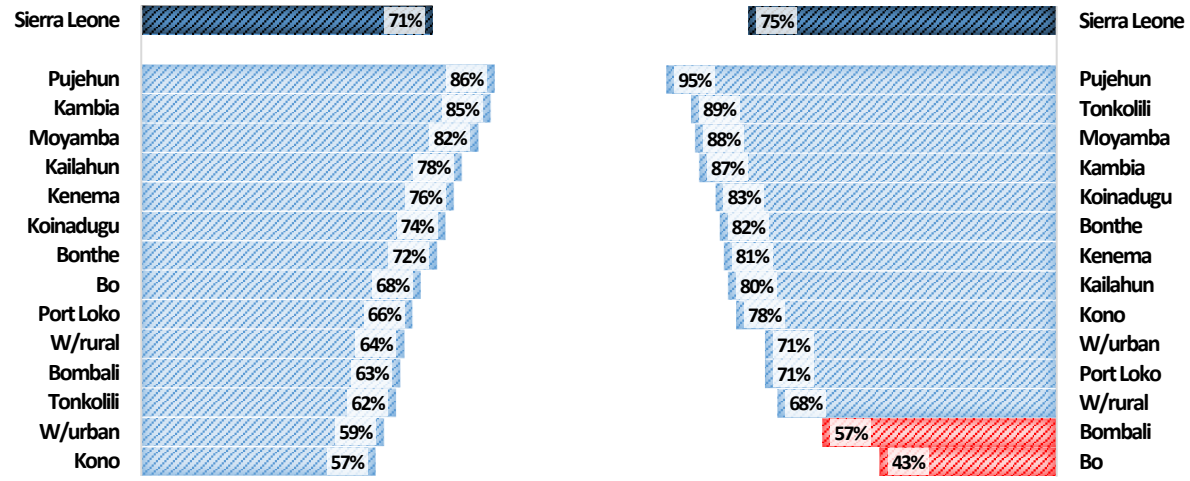


Figure 15: Reporting of no stock-out of $MgSO_4$, 2015 (left) and 2016 (right)

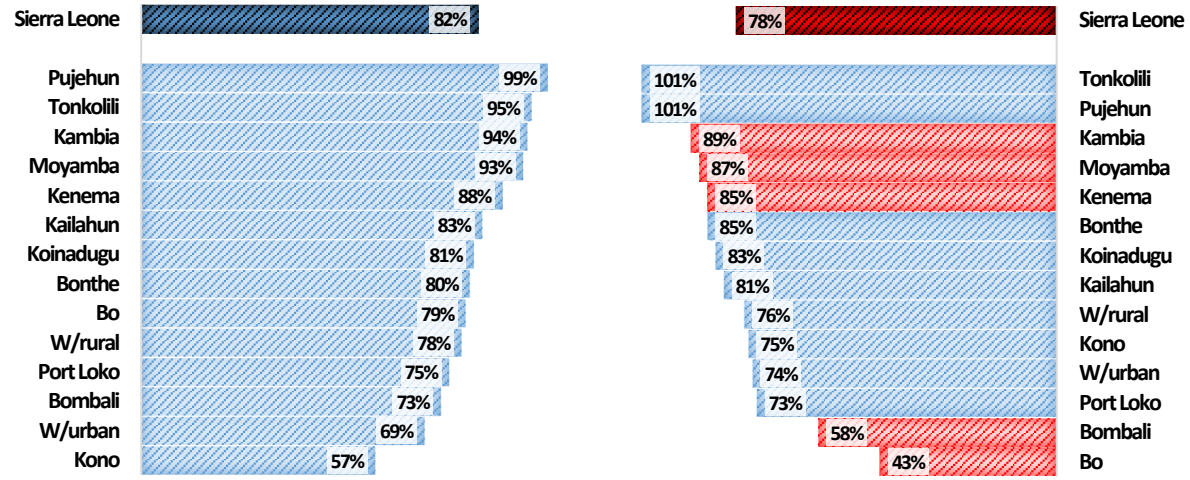
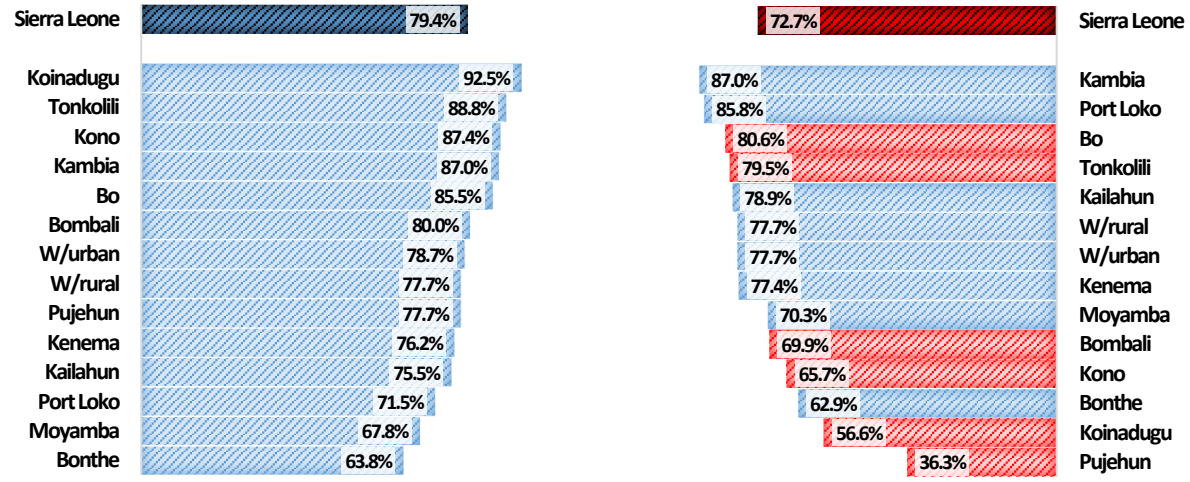


Figure 16: LMIS data timeliness, 2015 (left) and 2016 (right)



Summary of performance across indicators

Only limited data was submitted for the effective supply and reporting on drugs and commodities, with the data on stock-outs from DHIS-2 as opposed to any of the LMIS systems. Once the new supply chain system is established in the coming years, it will be possible to present a more comprehensive analysis of functioning of the supply chain and access to medicines and essential commodities in Sierra Leone.

From the tracer items included here, it is clear that there is some variation in the availability of essential supplies, with ORS, oxytocin, and magnesium sulphate showing 'no stock-outs' across 70-80% of facilities, and zinc showing 'no stock-outs' across only 20-23% of facilities in the last 2 years. Between 2015 and 2016 the effectiveness of drugs and commodities supply has remained fairly constant, with 3-4% more facilities showing no stock-out of ORS, zinc, and oxytocin in 2016, and 4% fewer facilities showing no stock-out of magnesium sulphate. Drilling down to the district level, the supply to most districts improved, but showed significant falls for Bo (across all 4 tracer items), Bombali (across 3 tracer items), and others highlighted in red (figures 12-15). Data on amoxicillin was also submitted, though showed clear internal consistencies and so was not presented here.

On the reporting side, timeliness of data reporting from the LMIS system fell from 79.4% in 2015 to 72.7% in 2016, with significant falls seen in six districts (figure 16). This will require further attention going forwards in order to support effective supply chain management.

Key activities relating to access to essential drugs and commodities in 2016

Dissolution of NPPU and interim arrangements

The previous procurement agency for drugs and medical supplies, the National Pharmaceutical Procurement Unit (NPPU) was dissolved in March 2016 to make way for the reform process to begin in earnest. An interim body was formed in the meantime under the capable stewardship of the Permanent Secretary, Acting Deputy Chief Pharmacist, Director of Audit, and Director of Support Services.

Until the reform process is complete, the interim arrangements involve the operation of parallel supply chains, e.g. for Free Health Care Initiative (FHCI) drugs and commodities; National Malaria Control Programme (NCMP) drugs and commodities; National Leprosy and TB Control Programme (NLTCP) drugs and commodities; and reproductive health / family planning drugs and commodities. There is, however, some integration at different levels of the system – e.g. around warehousing and data collection. The primary procurement agent for the Government of Sierra Leone is UNICEF. The interim NPPU operations managed a total of four nationwide distributions of commodities in 2016.

The NPPU reform process is currently underway, and progress is being made towards the formation of the new NPPU board by the end of 2017.

Logistics management and information system (LMIS) revision

2016 saw the revision of LMIS tools, including:

- Inventory control cards – to track movement of commodities in the store until they are issued
- Daily dispensing register – to capture the actual dispensing of drugs to patients
- Report, request, and issue voucher – to capture monthly reporting
- Treatment register – to capture rational drug use through monitoring which drugs are used for a range of common conditions

Training on these areas was undertaken nationwide for the first phase of training of trainers. Cascade training of PHU in-charges will take place in 2017.

In addition to these areas, the implementation of the new inventory software – m-supply – has begun. In 2016, the Ministry signed a contract with the service providers, and will begin rollout in 2017.

Central warehouse development

The development of a purpose-built central warehouse for ensuring an effective national supply chain was also started in 2016. The Ministry hired a consultant to support the process, and procurement of services begun in earnest in December 2016.

Strengthening distribution

Thirteen trucks for distribution of medicines and commodities were procured and arrived in country. These will ease 'first mile' distribution from central to district level. They are currently parked at MoHS awaiting handover to the newly constituted NPPU as part of their fleet.

Quantification of commodities

A commodity quantification exercise took place in October 2016, capturing the FHCI needs for the whole country. This represented a major improvement from the previous year, where quantification took place on an ad hoc basis leading to delays in orders from the procurement agency.

Key challenges in 2016

Despite the successes noted above, engaging in NPPU reform inevitably raised several challenges for the supply and distribution of drugs and medical supplies in 2016. These included:

- Disruption of supply chain activities consequent to the dismantling of NPPU and the time required for the care-taking team to get up to speed.
- Challenges with handover due to competing priorities for members of the new team – particularly as they included members in top managerial posts in the MoHS.

Pillar 4: Health financing

Introduction

Health financing is a central pillar of the health system, cutting across all areas from human resources for health, to drugs and commodities, to the building and maintenance of physical infrastructure and health information systems. It relates to the generation and collection of funding for the health sector from both within Sierra Leone and external partners, as well as the use of these funds to provide health services for the whole population.

Work on health financing in Sierra Leone is primarily carried out by the Health Financing Unit (HFU) in the Directorate of Policy, Planning, and Information (DPPI) in MoHS, but as a cross-cutting issue, it also involves colleagues from across MoHS, MoFED, NASSIT, and partners. 2016 was again a busy year for the Ministry with regard to health financing, including the completion of the 2014 National Health Accounts.

Health financing data always lags behind other types of data due to the nature of data collection: only once all funds have been disbursed and verified as final can these data be collected from all donors, NGOs and other sources; and only then can these data be analysed to compile the National Health Accounts (NHA). In addition to this, the Ebola outbreak added a further delay to the process since the focus of all staff was on tackling the outbreak. Accordingly, the NHA 2013 was published in 2015, and the NHA 2014 was published in 2016.

This chapter will first present the performance of the MoHS with regard to health financing by presenting core and supplementary indicators in this area using the latest data from the 2014 NHA, and then provide an overview of the activities and challenges of 2016 before concluding with a brief look forwards to 2017.

Core indicators

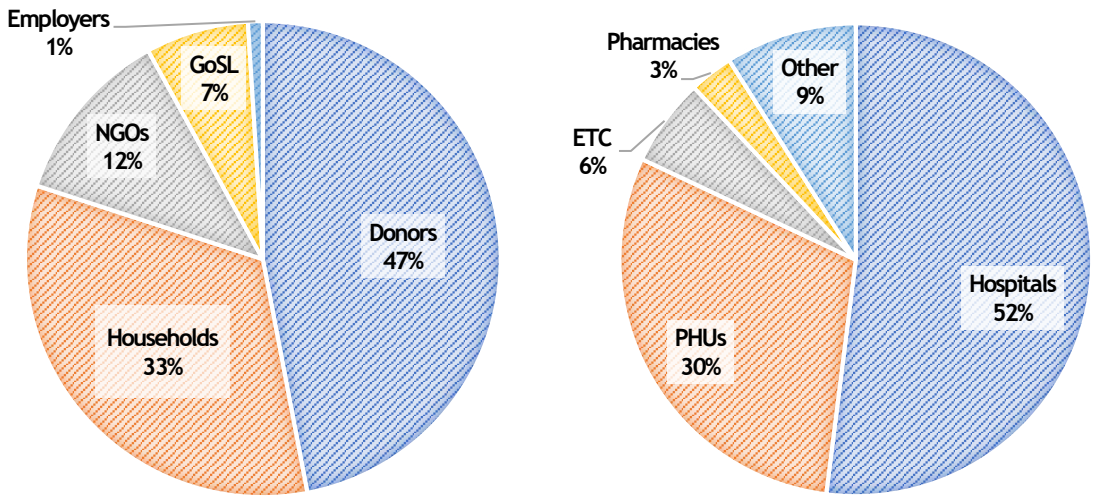
	Indicator	Previous estimates		Most recent estimates		Trend
1	Total expenditure on health as a % of GDP	11.2%	(NHA 2013)	**21.7%**	(NHA 2014)	↑
2	Government expenditure on health as a % of total current expenditure on health	6.8%	(NHA 2013)	**7.3%**	(NHA 2014)	↑
3	Out of pocket payment for health as a % of total current expenditure on health	61.6%	(NHA 2013)	**33%**	(NHA 2014)	↓
4a	Externally sourced funding for health as a % of total current expenditure on health (donors)	24.4%	(NHA 2013)	**46.9%**	(NHA 2014)	↑
4b	Externally sourced funding for health as a % of total current expenditure on health (NGOs)	7.2%	(NHA 2013)	**11.8%**	(NHA 2014)	↑
5	Total capital expenditure on health as a % of total capital + current expenditure on health[9]					
6	Headcount ratio of catastrophic health expenditure					
7	Headcount ratio of impoverishing health expenditure					

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	Total health expenditure	SLL 2.5tn US$ 590m	NHA 2013	**SLL 4.7tn US$ 1.1bn**	NHA 2014	↑
2	Total health expenditure per capita	SLL 0.4m USD 95	NHA 2013	**0.7m USD 160**	NHA 2014	↑

Data visualisations

Figure 17: Spending on health by funding source (left) and by provider type (right)



[9] This indicator is not calculated in Sierra Leone due to the fact that donor financing, which comprises a significant proportion of total expenditure on health, is not commonly broken down into current and capital expenditure.

Figure 18: Spending on health by disease area, 2013 (pre-Ebola) (left) and 2014 (during Ebola) (right)

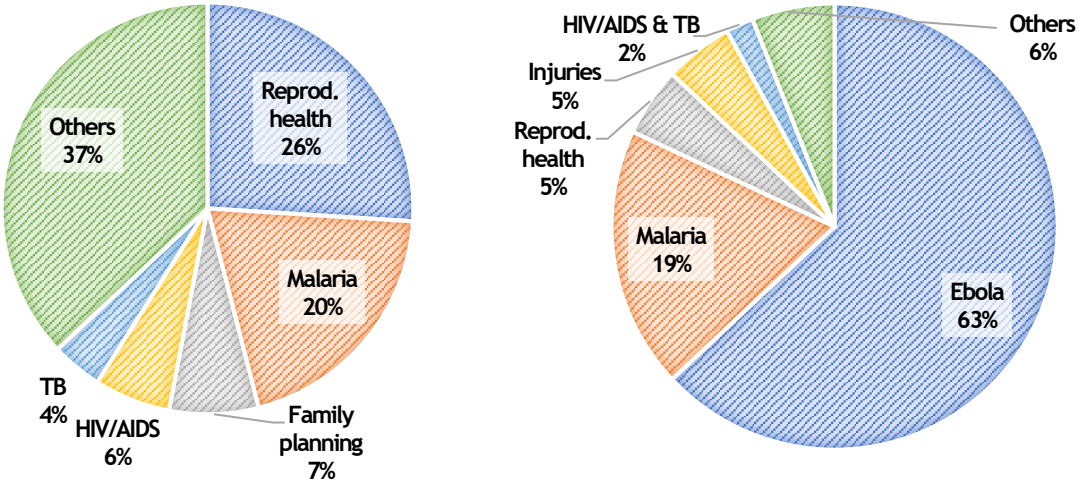


Figure 19: Shift in source of funds for total current expenditure on health from 2013 to 2014 (in US$ millions)

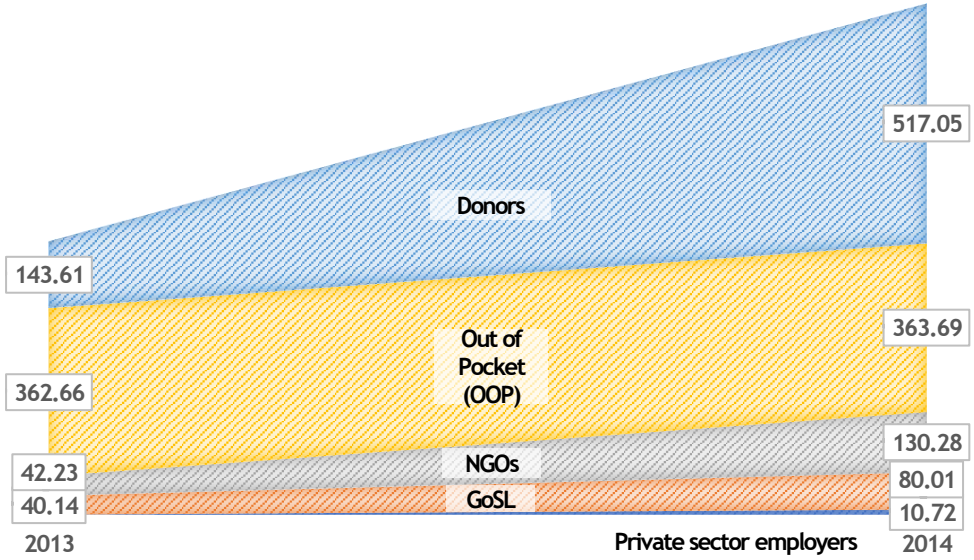
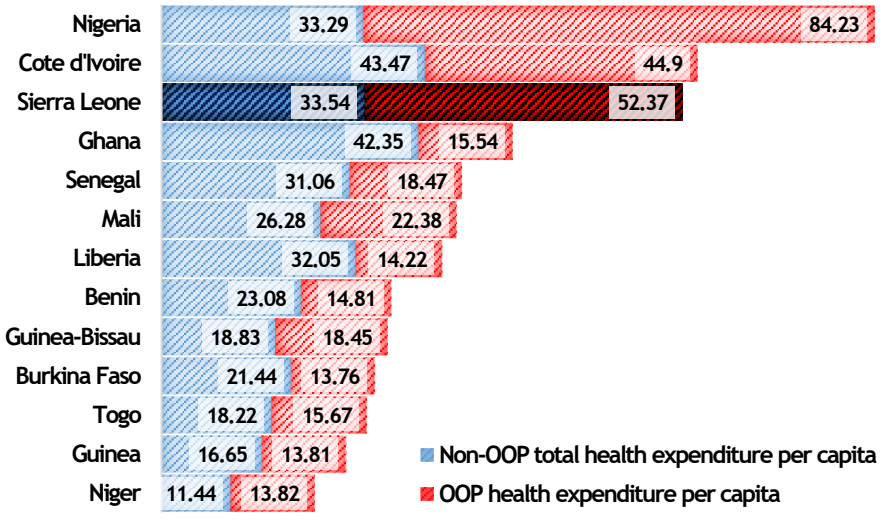


Figure 20: Regional comparison of total health expenditure (in US$) per capita, 2014[10]



[10] Source: this figure only uses data from the WHO Global Health Expenditure Database, available at http://apps.who.int/nha/database. All other visualisations are drawn from the National Health Accounts.

Summary of performance across indicators

The data for 2014 predictably show a large rise in funding from donors, NGOs, and GoSL in response to the Ebola outbreak. In fact, total health expenditure in Sierra Leone almost doubled from 2013 to 2014 from $590m to $1.1bn according to the NHA. Similarly, spending on disease areas shifted radically towards managing the Ebola epidemic, though NHA 2013 data clearly shows that the largest areas of health spending in Sierra Leone are typically reproductive health, malaria, and family planning – accounting for over half of all spending on health.

Finally, whilst estimated health expenditure per capita in Sierra Leone is higher than all of its regional neighbours with the exception of Nigeria and Cote d'Ivoire, projected OOP expenditure is also higher than all of its regional neighbours except Nigeria – which has a much higher GDP/capita than Sierra Leone.[11] This is a major concern with regard to health spending impoverishing the population, and tackling this is therefore a priority for health financing in Sierra Leone.

The health financing landscape from 2014, during the Ebola outbreak, has necessarily limited relevance to the post-Ebola context of 2016. Accordingly, the analysis provided here is brief. However, a more complete analysis of health financing data in Sierra Leone is available in the National Health Accounts for the two years analysed here.

Key activities relating to health financing in 2016

National Health Accounts (NHA) 2014

The NHA reports are a critical part of health financing governance in Sierra Leone. Through primary data collection from all health partners and GoSL, they track funds coming into the health sector in Sierra Leone by source, how these funds flow through the system, and how they are ultimately spent.

The NHA 2014 process began in January 2016 supported by the WHO, with primary data collection complete by March, data mapping complete by April 2016, and finalisation of the study file by December 2016. The finalised report will be published by Q2 2017 after review by the WHO.

As part of the process, a validation workshop took place in May 2016, and many useful inputs were received from a range of stakeholders. The primary take-away message was that future NHAs should incorporate multi-sectoral programmes where they have a health component in order to more accurately assess total spending on health.

Performance Based Financing (PBF)

Sierra Leone has successfully implemented a performance based financing (PBF) scheme since 2011 with support from the World Bank (in other countries this is sometimes referred to as 'results based financing – RBF'). This has introduced incentives into the health sector for improving performance across a range of indicators agreed by the MoHS. These incentives have then been paid both to facility staff to reflect their efforts in improving performance, and to the facilities themselves to be invested in infrastructural improvements.

The funding for the first phase of PBF in Sierra Leone (2011 – 2016) has now ended. In 2016, the relevant payments were disbursed to the facilities and DHMTs (for supervision of the PBF scheme in the Districts).

A joint supervision visit of two tertiary hospitals engaged in the PBF scheme also took place – to Ola During Children's Hospital and Princess Christian Maternity Hospital. This allowed members of the Health Financing Unit as well as other MoHS and MoFED staff to assess the performance of a health facility together, and reflect on the strengths and weaknesses of the scheme in light of this.

[11] The latest (2015) estimates for GDP/capita are Sierra Leone: $653/capita and Nigeria: $2,640/capita. Accordingly, the $52.37/capita OOP expenditure in Sierra Leone will exert a far greater financial burden on the population than the $84.23/capita OOP expenditure in Nigeria, even once adjusted for cost of living.

Finally, an external verification of the PBF scheme took place, with the report published in October 2016. High-level meetings between MoFED and MoHS are underway to discuss the future of PBF in Sierra Leone.

Resource Mapping

While the NHA looks into the past to understand how money was spent historically, there is little understanding of how funding for health has been allocated by donors, partners, and GoSL looking forwards. Mapping the resources that are made available to the health sector annually will help the MoHS to allocate them in a way that is aligned with national priorities, as well as help to understand where the gaps are and seek funding accordingly.

With support from the WHO, the process for the resource mapping was agreed and the template for data collection finalised in December 2016, with data collection and report finalisation to be completed by Q2 2017.

Capacity building in health financing

The Health Financing Unit (HFU) attended a week-long capacity building exercise in 2016, delivered by OPM. The topics covered aligned with the deliverables of the HFU, and included:

- Fiscal space analysis
- Costing of health programmes
- National Health Financing Strategy development
- Budget tracking

Sierra Leone Social Health Insurance Scheme (SLeSHI)

The Government of Sierra Leone has proposed developing a social health insurance scheme to cover the whole population of Sierra Leone – SLeSHI. Work on SLeSHI is led by a team at NASSIT, who have convened a national technical working group (TWG) to bring together key stakeholders including MoHS, WHO, and others.

As part of its support to the TWG, members of the HFU continued to attend meetings throughout 2016, providing advice and updating the MoHS on progress made.

A team from Tanzania came to support the SLeSHI team through the development of an actuarial valuation report toward the end of 2016, and this report will be finalised and launched in Q1 2017. Following this launch, a clearer timeline for next steps for SLeSHI will be developed.

Key challenges in 2016

The HFU and colleagues across GoSL had a busy and successful year with regard to health financing, however there were several challenges identified. Reflecting on these will support further progress in 2017.

- The lag of one year in conducting the NHA due to Ebola has led to data and logistical challenges due to organisations leaving or no longer having historical data.
- Data collection for the NHA can be challenging due to non-compliance by development partners.
- The ending of the PBF scheme has left a gap in terms of funds for facilities and staff relative to what they were receiving, and there is not yet any agreement on the future of the scheme.
- There are a multiplicity of bank account details recorded for facilities, and verifying these on an ad hoc basis leads to delays in disbursement of funds
- The current institutional structures limit the ability of HFU / MoHS to engage fully in the SLeSHI planning process – despite the considerable efforts made by the SLeSHI team to be inclusive with regard to TWG meetings.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, planned activities and actions for 2017 relating to health financing include:

- Combining the NHA for 2015 and 2016 in a single report to be completed in 2017, thereby 'catching up' following the delay due to Ebola and ending the current time lag.
- Working together with the SLA team to include financial reporting for the NHA as a compulsory clause in the annual SLA agreements signed with each implementing partner.
- Beginning work on the first ever National Health Financing Strategy for Sierra Leone. Funding to support this work has already been agreed by the World Bank, and the strategy will include the country's approach to revenue generation, collection, and pooling, as well as purchasing of health services to improve the health of the whole population whilst reducing out-of-pocket spending on health and exposure to catastrophic health expenditure.
- As part of the work on the strategy, continuing high-level discussions on the future of the PBF scheme in Sierra Leone, and conducting a bank account verification exercise to increase transparency and efficiency of payments to health facilities as appropriate.
- As part of the work on the strategy, increasing the level of engagement of the HFU and MoHS with the SLeSHI team at NASSIT on the future of social health insurance in Sierra Leone. Completing the resource mapping of future funds projected to be spent in the health sector, and publishing the NHA 2014 report.

Pillar 5: Health information systems

Introduction

Health information systems (HIS) underpin all of the data generated by the health system, and the use of these data to inform decision making across the whole health sector. HIS includes the paper forms used to collect data at the PHU level, all the way up to the electronic databases used to monitor activity and performance across all the districts. It includes data collected on health service delivery, to data collected on infectious diseases surveillance. It also includes survey data such as the Multiple Indicator Cluster Survey (MICS) and the Demographic and Health Survey (DHS), both of which are carried out approximately every 5 years, and original primary research studies.

HIS remains a challenging area for Sierra Leone, with multiple systems operating in parallel – both within and outside the Ministry. The lack of interoperability between these systems hampers progress in the use of data to drive effective planning and decision-making. Nonetheless, 2016 marked a turning point for HIS in Sierra Leone with the start of the journey towards a coherent vision for all health data being made available and used by key decision-makers in a timely fashion.

This chapter will first present the performance of the MoHS with regard to HIS by presenting core and supplementary indicators relating to this area, and then provide an overview of activities and challenges of 2016 before concluding with a brief look forwards to 2017.

Core indicators

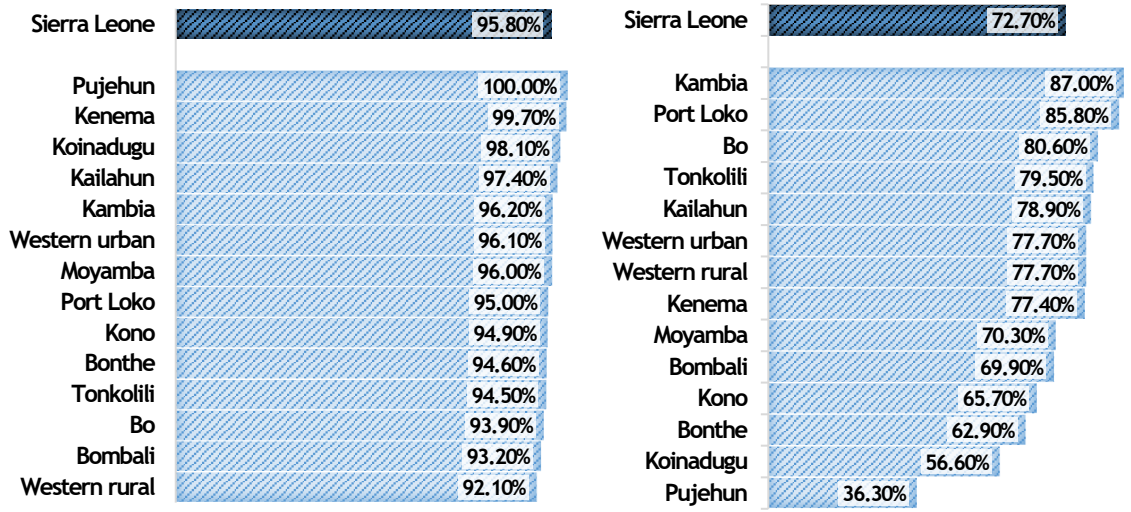
	Indicator	Previous estimates		Most recent estimates		Trend
1a	**Completeness of HMIS reporting by facilities (target: >90%)** (% of health facilities submitting reports)	93.8%	(DHIS-2 2015)	**95.8%**	(DHIS-2 2016)	↑
1b	**Completeness of LMIS reporting by facilities (target: >80%)** (% of health facilities submitting reports)	79.4%	(DHIS-2 2015)	**72.7%**	(DHIS-2 2016)	↓
1c	**Completeness of IDSR reporting by facilities (target: >80%)** (% of health facilities submitting reports)	N/A	N/A	**92%**	(IDSR 2016)	**N/A**
2a	**Birth registration coverage among 0-4 year olds** (% 0-4 years olds whose births are registered)	N/A	N/A	**65.1%**	(Census 2015)	**N/A**
2b	**Birth registration coverage among whole population** (% population whose births are registered)	N/A	N/A	**43.1%**	(Census 2015)	**N/A**
3	**Death registration coverage**[12] (% deaths reported by those surveyed that were registered)	N/A	N/A	**Not released**	(Census 2015)	**N/A**

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1a	**Timeliness of HMIS reporting (facilities to district)** (% of health facilities submitting reports by the 15th of the following month)	87.9%	(DHIS-2 2015)	**85.1%**	(DHIS-2 2016)	↓
1b	**Timeliness of HMIS reporting (district to national)** (% of DHMTs submitting reports by the 15th of the following month)	20.3%	(DHIS-2 2015)	**27.8%**	(DHIS-2 2016)	↑
2	**Proportion of IDSR events detected by HCWs**	N/A	N/A	**90%**	(IDSR 16)	**N/A**
3	**Proportion of IDSR events detected by CHWs**	N/A	N/A	**6%**	(IDSR 16)	**N/A**
4	**Proportion of IDSR cases with rapid response in 48h**	N/A	N/A	**90%**	(IDSR 16)	**N/A**
5	**Proportion of IDSR investigated cases with lab results within 3-7 days**	N/A	N/A	**17%**	(IDSR 16)	**N/A**

Data visualisations

Figure 21: HMIS data completeness, 2016 (left) LMIS data completeness, 2016 (right)



[12] The quality of data submitted by the Department of Births and Deaths was too low to be analysed and included in this report, and therefore the only data source used for births and deaths registration was the 2015 census. The data on death reporting had not been released by Statistics Sierra Leone at the time this report was published.

Figure 22: HMIS data timeliness 2016, facility to DHMT (left), and DHMT to central (right)

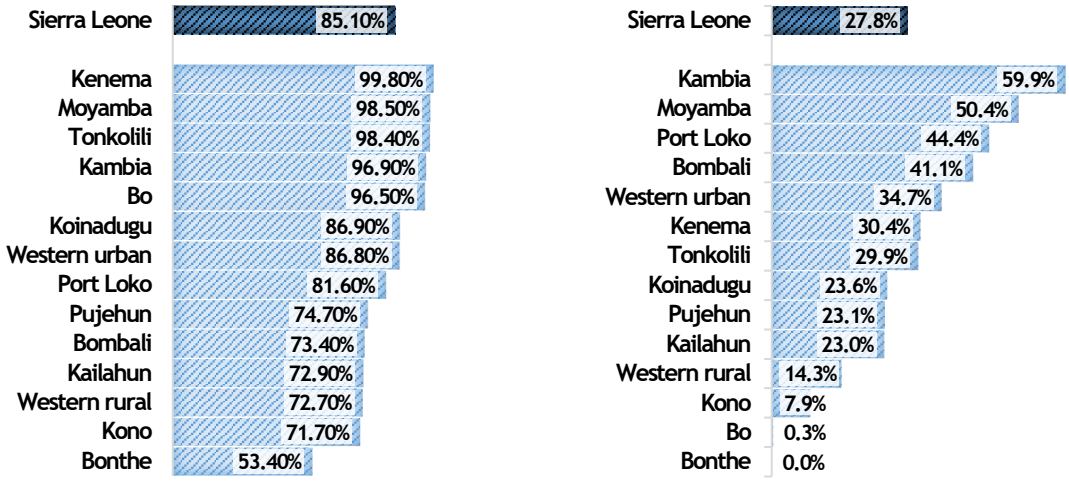


Figure 23: HMIS data timeliness (to central level) and completeness, 2013 - 2016

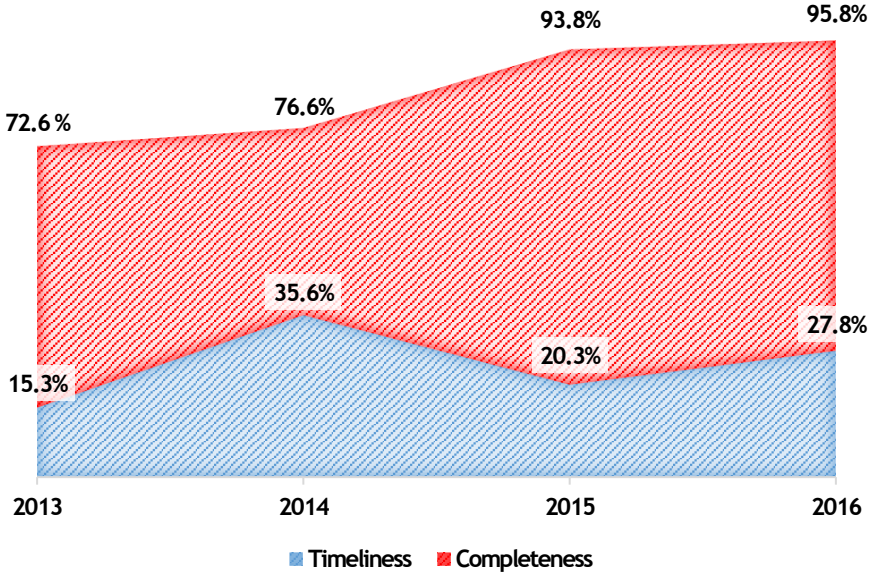
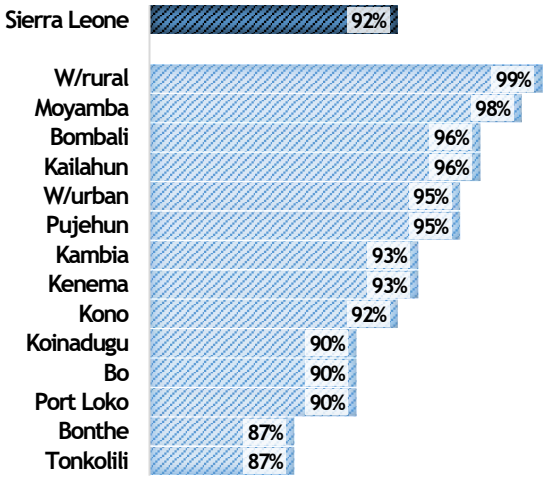


Figure 24: IDSR data completeness, 2016



Summary of progress on indicators

The indicators for HIS performance included this year relate to the Health Management Information System (HMIS) used to track health system activity in Sierra Leone (DHIS-2); the Logistics Management Information System (LMIS) used to track activity in the supply chain for drugs and medical supplies; and the Integrated Disease Surveillance and Response (IDSR) system used for disease surveillance.

The data for 2016 show an improvement across all indicators related to DHIS-2, and a slight fall in the completeness of reporting for LMIS. Every single district achieved the target of 90% completeness of reporting, and this represents the best performance seen yet. Data completeness for IDSR reporting was also above the target of 80% across all districts.

In terms of data timeliness (reporting by the 15th of the month following data collection), overall the country improved from 27.8% of reports coming in on time from 20.3% in 2015 – though this clearly represents ongoing poor timeliness. From the breakdown of 'health facility to DHMT' and 'DHMT to central level', the major bottleneck is at the 'DHMT to central level' part of the chain. None of the districts managed to achieve the 90% target for timeliness for this indicator, with all of them falling below the 80% minimum threshold. For the timeliness of reporting from health facilities to DHMTs (using paper forms), the performance was much better with 5 districts achieving >90%, another 3 achieving >80%, and remaining 6 falling below 80%.

With regard to LMIS, completeness of reporting fell from 79.4% to 72.7%, with no districts achieving >90% and only 3 districts above the minimum threshold of 80%.

Supplementary indicators are included on outbreak detection and response as submitted by the IDSR team for the 2016, and in future years it will be possible to monitor trends in these indicators to assess performance of the IDSR system.

Overall, the country is clearly going in the right direction, with completeness of reporting rising from 72.6% in 2013 to 95.8% in 2016; and timeliness of reporting rising from 15.3% in 2013 to 27.8% in 2016. Nonetheless, there is much more to do, particularly on timeliness and LMIS completeness of reporting and timeliness of HMIS reporting from DHMT to central level.

Key activities related to HIS in 2016

Integration of HIS systems into DHIS-2

At the end of 2015, there were at least 17 different HIS platforms in use in Sierra Leone, with programmes often using their own excel-based reporting rather than the national HMIS system of DHIS-2. Some of these platforms perform very different functions, such as those related to supply chain management and human resources management, but the long-term plan is to integrate many of the programme areas into DHIS-2.

In 2016, the following programmes were fully integrated into DHIS-2:

- National Malaria Control Programme (NMCP)
- National HIV / AIDS Control Programme (NACP)
- Integrated Disease Surveillance and Response (IDSR)
- Maternal Death Surveillance and Response (MDSR)
- Infection Prevention and Control (IPC)

Further platforms are planned for integration in 2017.

Strengthening HIS interoperability

Following on from the discussion of the multiple HIS platforms in use in Sierra Leone, the MoHS made a push for improving interoperability of these platforms. A key step in this process was the convening of the Sierra Leone Health Information Systems Interoperability Workshop in August 2016. This brought together key stakeholders with experts from across

the globe to discuss the challenges faced by Sierra Leone and the potential solutions going forwards.

A key output of the workshop was the 'Bintumani Declaration', which was adopted by all participants. This committed the country to a collective vision around HIS interoperability through the following 6 policy statements:

1. Sierra Leone will develop a unified national architecture for HIS
2. We will improve the availability and appropriate use of quality health information across all levels of the health system
3. We will increase access to and use of health information technology to improve service delivery and demand for services to improve health outcomes
4. This process will be led, championed, and sustained by DPPI for the benefit of all
5. We will strengthen our existing governance structure to improve its effectiveness and to improve participation by our partners
6. We pledge to seek commitment by GoSL and our partners to provide the technical and financial resources to realise this vision

Development of the HIS strategy 2017-2021

Building on this, MoHS also started work on a new HIS strategy for the country. This was based on a vision of an HIS system that provides timely, efficient, accurate, and reliable information to guide evidence-based decision making.

The guiding principles of the strategy will be:

- Sustainability through national financing
- Cost-effectiveness to achieve value for money
- Integration and the elimination of duplication across the system
- Reliability and accuracy to improve trust in the system
- Timeliness of completion and dissemination

Good progress was made in 2016, and the strategy is on course to be fully costed and launched in 2017.

Publication of HIS bulletins

The two key HIS information products are the HMIS bulletin, and the weekly epidemiological bulletin. These continued to be produced and published in 2016, with the weekly epidemiological bulletin disseminating near real-time surveillance data across infectious diseases including malaria, severe malnutrition, and maternal deaths. There are ongoing challenges with the time lag for the HMIS bulletin, as data is only considered 'final' 3 months after it is recorded, and M&E officers can be slow to review their data.

Reconstitution of national ethics committee

The national ethics committee was responsible for reviewing both local and international research protocols but had not met for a significant period prior to 2016. This year it was reconstituted and held its maiden meeting in January 2016. Since then, monthly meetings have taken place and over 100 applications have been reviewed, though there are ongoing challenges relating to a lack of space and absence of a budget line for this activity in the MoHS budget. Original research is an important, though often overlooked source of data on the health system, and the national ethics committee looks forward to continuing to play an important role in supporting this in the future.

Planning for the SARA 2017 survey

The Service Availability and Readiness Assessment (SARA) is a key tool in monitoring the standard of health services in a country using a standardised tool developed by WHO. Sierra Leone last conducted the survey in 2013, though last published it in 2012. Accordingly, the leadership of the Ministry have worked together with partners to move forwards with a SARA survey in 2017. The 2017 SARA will be a census of all health facilities in Sierra Leone and

therefore inform the creation of a master facility list (MFL) – a first in the sub-region – and it will be the first SARA survey to assess the quality of care delivered in priority areas (HIV/AIDS, TB, malaria, and RMNCAH). In 2016, the survey was successfully planned, costed, and budgeted for ready for training, deployment, and analysis in 2017.

Planning for the launch of a MoHS web portal

Whilst the MoHS does currently host a website, it is not fit for the purpose of hosting all the key resources produced by the Ministry in a way that is accessible to all stakeholders. Accordingly, plans were drawn up for the development of a new web portal to carry out this role, and funding for this was secured in 2016.

Revitalisation of IDSR

The IDSR system in Sierra Leone was assessed in January 2015, and major shortcomings were noted. Accordingly, the 2010 IDSR guidelines were adapted, printed, and distributed as part of the revitalisation of the system, and a major programme of HCW training and training of trainers was rolled out.

The IDSR system is now being used effectively to monitor a range of disease threats in Sierra Leone, as evidenced by the data completeness reporting. These include: measles (in which the IDSR system played a key role in tackling the measles outbreak in 2016); rubella; yellow fever; tetanus, acute flaccid paralysis, guinea worm, and maternal deaths (also monitored through the MDSR system).

Another aspect of the IDSR revitalisation was the roll-out of community-based surveillance, with training of 85 master trainers, 884 health workers, and 8,367 CHWs across 9 districts in 2016. Data from the 2016 shows that results from the early phase of the revitalisation of IDSR have already been impressive across surveillance, detection, notification, and response. As more elements of the revitalisation are rolled out, the strength of Sierra Leone's disease surveillance and response system should continue to improve.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed activities and actions for 2017 include:

- Integrating the remaining programme areas into DHIS-2, including: TB and leprosy; nutrition; laboratories; child health / EPI; CHW hub; and patient tracker for HIV and MDSR
- Integrating aggregated hospital data into DHIS-2
- Moving to data being electronically captured and managed at CHC level
- Developing a costed operational plan for the HIS strategy
- Developing an eHealth strategy and implementation plan, and establishing and managing an eHealth Coordination Hub to coordinate and regulate all eHealth initiatives in the country
- Starting work on the implementation of electronic medical records for roll-out in 2018
- Continuing to produce bi-annual HMIS bulletins and weekly epidemiological reports
- Digitising the application process for the ethics committee and continuing monthly meetings
- Implementing the 2017 SARA survey
- Continuing to strengthen the IDSR system, including:
  - Strengthening surveillance in high volume facilities
  - Building surveillance and response capacity at chiefdom level
  - Improving the quality of indicator-based surveillance
  - Completing the roll-out of community-based surveillance
  - Developing an IHR roadmap including the role of HIS in supporting IDSR
  - Rolling out the new e-IDSR system to health facilities to strengthen the use of HIS in IDSR
- Continuing to strengthen LMIS systems alongside NPPU reforms as described in that chapter.

Pillar 6: Health service delivery

Introduction

Ensuring the availability of quality health services that the population has access to is a key function of any health system. This is in part achieved as an immediate output of the inputs into the health system: improving workforce, medical supplies, and financing should lead to improved service delivery and enhanced access to services.

In addition to the availability of health services meeting a minimum quality standard, other important aspects of health service delivery include: accessibility of services, including proximity to where people live and the absence of barriers relating to cost, language, culture, or geography; comprehensiveness of the range of health services provided and coverage across all target populations and across all income groups and social groups; and quality of services, including their effectiveness, safety, timeliness, and patient-centredness. Good management, including coordination across local health service networks and accountability for and efficiency of resource use, are also critical elements.

Sierra Leone is working towards strengthening service delivery in all of these dimensions, though a comprehensive monitoring framework for indicators covering all of these areas does not yet exist. The deployment of the standardised Service Availability and Readiness Assessment (SARA) survey was paused between 2014 and 2016 due to the need to prioritise control of the Ebola outbreak and rebuilding the health system, but it will take place again in 2017.

In the absence of SARA data for recent years, this chapter will present a brief overview of health service delivery indicators related to facility density, and a brief summary of progress on the new National Emergency Medical Service (NEMS). In future years this chapter will provide an update on the status of service delivery in Sierra Leone in line with the most recent SARA survey.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1a	Number of total health facilities per 10,000 population	N/A	N/A	1.64	Payroll audit '16	N/A
1b	Number of PHUs per 10,000 population	N/A	N/A	1.6	Payroll audit '16	N/A
1c	Number of hospitals per 10,000 population	N/A	N/A	0.04	Payroll audit '16	N/A
2	Percentage of population living within 5 miles of a health facility[13]	N/A	N/A	84.7%	Census 2015	N/A
3	Number of inpatient beds per 10,000 population	-	-	-	-	-
4	Number of outpatient visits per 10,000 population	-	-	-	-	-
5	General service readiness score for health facilities	-	-	-	-	-
6	Service-specific availability and readiness	-	-	-	-	-
7	Hospital bed density per 10,000 population	-	-	-	-	-

Data visualisations

Figure 25: Health facility density (hospitals and PHUs) per 10,000 population, 2016 (left) and percentage of population living more than 5 miles from a health facility, 2015 (right)

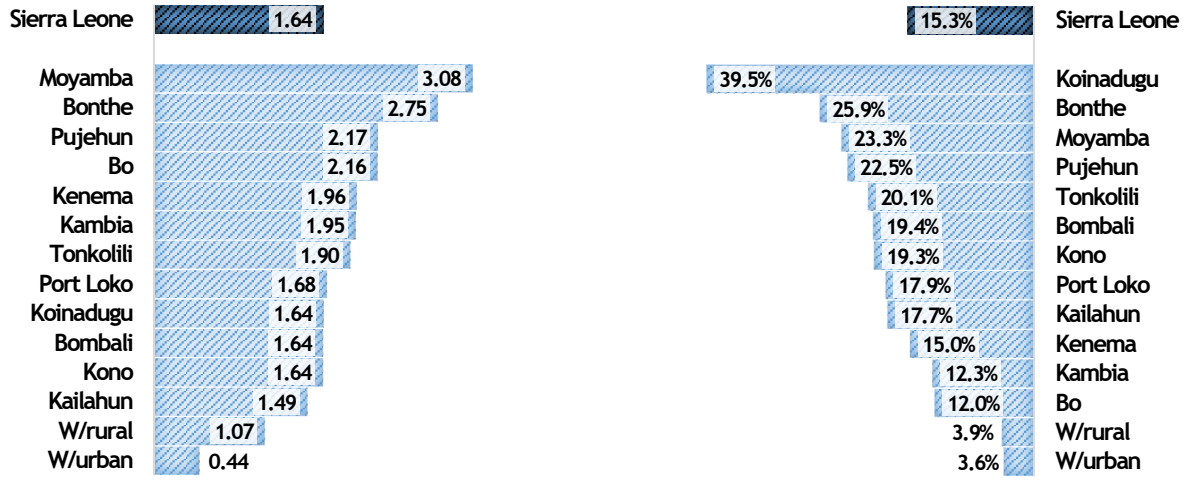
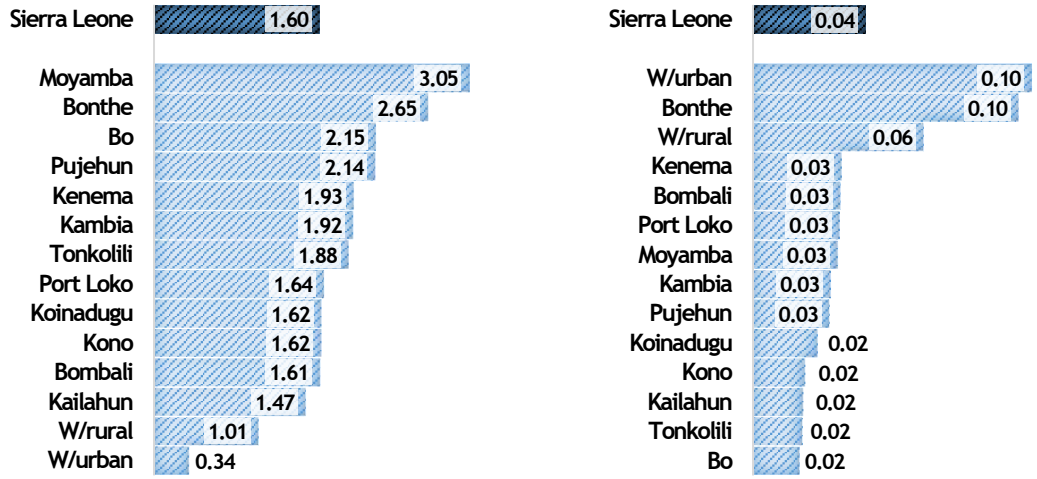


Figure 26: PHU density per 10,000 population (left), and hospital density per 10,000 population, 2016 (right)



[13] The 'standard' indicator for health service access is for living within 5km of a health facility as opposed to 5 miles (which corresponds to ~8km). Unfortunately, the question asked in the 2015 Census was subdivided by 0.5 miles, 1 mile, and 5 miles. In future years, data should be gathered on distance in km, as well as those facilities that are within 5km and are otherwise difficult to reach. The figures for this indicator exclude the 33,341 respondents who answered 'don't know'.

Summary of progress on indicators

These data show that the density of health facilities is fairly similar across most of the provinces – ranging from 1.49 to 2.17 per 10,000 population. At the top, the two most densely served districts are Moyamba (3.08 health facilities per 10,000 population) and Bonthe (2.75 health facilities per 10,000 population). Western rural and especially Western Urban have much lower levels of facility density taking into account all facilities, but when looking at hospitals alone Western Urban has the highest density of all the districts.

Just looking at facility density alone does not provide a useful analysis though. The key question is: are health facilities accessible to most or all of the population. In this regard, the only data available is from the 2015 census which looked at the proportion of the population living more than 5 miles from a health facility. It is a shame that this distance was used instead of the internationally agreed 5km, but what this means is that those households that are more than 5 miles (~8km) away from a health facility will really struggle with access. What we see is that in Western Area over 95% of the population are within 5 miles of a health facility, and at the other end of the spectrum in Koinadugu only 60% are. In the other districts, at least three-quarters of the population live within 5 miles of a health facility, but this leaves a significant proportion without access to health services.

Going forwards, combining the geo-mapping data from the 2017 SARA with geo-mapping of population centres and roads should make it possible to analyse where there are too many facilities and where there are too few. If this is combined with a robust, enforced policy on health facility opening and closing it will be possible to ensure that the available resources are invested in improving access for the underserved populations in Sierra Leone rather than doubling up service provision to already well-served populations.

National Emergency Medical Service (NEMS)

NEMS is a flagship programme designed to improve access to health services in emergencies in Sierra Leone. It recognises that two of the key barriers preventing mothers and children under 5 from accessing health facilities are cost and accessibility – especially in rural communities. Accordingly, NEMS will provide emergency transportation to these key groups in addition to the wider population, including pre-hospital care up to provincial hospitals. The programme was designed in 2016 with a launch date of 2017.

By the end of 2016, training was completed for 652 paramedics and 485 drivers as planned. The next steps are to recruit the firm to manage NEMS, construct the warehouse, and train staff. The ultimate result will be at least 149 ambulances providing emergency services under a centrally managed national programme, with 652 trained paramedics as the backbone of the service.

Whilst the NEMS programme was on track at the end of 2016, procurement delays had slowed progress. The MoHS is hopeful that these delays will be overcome and the successful launch of NEMS will take place in 2017 as planned.

Area 1: Reproductive and child health

Introduction

Improving reproductive, maternal, neonatal, child, and adolescent health (RMNCAH) is and must be at the heart of everything the health system strives to achieve in Sierra Leone.

On the one hand, this is because young people and women of reproductive age make up such a large proportion of Sierra Leone's population – with the most recent census carried out in 2015 showing that 40.9% of the whole population are under the age of 15, and 25.9% of the population are women of reproductive age (age 15-49). On the other hand, this is because the latest UN estimates show that women of reproductive age and children in Sierra Leone have some of the worst health outcomes of any country in the world: the worst maternal mortality ratio in the world; in the bottom five countries in the world for under 5 mortality and infant mortality; and in the bottom 10 countries in the world for neonatal mortality.

In 2016, the Ministry of Health and Sanitation rose to the challenge of tackling this vast and complex area, not just through the activities of the Directorate of Reproductive and Child Health (DRCH), but also through disease-specific programmes such as malaria and HIV/AIDS; upstream areas such as nutrition and environmental health and sanitation; and cross-cutting pillars discussed earlier.

This chapter will outline performance across key indicators related to RMNCAH, highlight the major activities and challenges faced by DRCH in 2016, and provide a brief look forwards to 2017. Activities of the other Directorates related to RMNCH outcomes will be discussed in their respective chapters.

Core indicators

	Indicator	Previous estimates		Most recent estimates[14]		LDC* mean	Trend	LDC* q'tile[15]
Impact indicators (core RMNCH areas)								
1	**Under 5 mortality rate** (probability of dying by age 5 per 1,000 live births)	160 217	(UN 2010) (MICS 2010)	**120** **156**	(UN 2015) (DHS 2013)	73.1	↓	Bottom
2	**Infant mortality rate** (probability of dying by age 1 per 1,000 live births)	107 128	(UN 2010) (MICS 2010)	**87** **92**	(UN 2015) (DHS 2013)	51.4	↓	Bottom
3	**Neonatal mortality rate** (probability of dying by 28 days per 1,000 live births)	40.7	(UN 2010)	**35** **39**	(UN 2015) (DHS 2013)	27.4	↓	Bottom
4	**Stillbirth rate** (per 1,000 live births)	N/A	N/A	**25.7**	(DHIS-2 2016)	N/A	N/A	N/A
5	**Maternal mortality ratio** (per 100,000 live births)	1,630 857	(UN 2010) (DHS 2008)	**1,360** **1,165**	(UN 2015) (DHS 2013)	436	↔[16]	Bottom
6	**Adolescent fertility rate** (per 1,000 girls aged 15-19)	133 122	(UN 2010) (MICS 2010)	**117** **125**	(UN 2015) (DHS 2013)	90.1	↔	3rd
7	**Total fertility rate** (average number of children per woman)	5.2 4.3	(UN 2010) (MICS 2010)	**5.2** **4.5** **4.9**	(Census 2015) (UN 2015) (DHS 2013)	4.1	↔	2nd
8	STI incidence rate	N/A		N/A		N/A		
9	New cases of vaccine preventable diseases	N/A		N/A		N/A		

	Indicator	Previous estimates		Most recent estimates		Trend
Outcome and output indicators (core RMNCH areas)						
10	**Demand for family planning satisfied with modern methods** (% of sexually active women aged 15-49 who have their need for family planning met with modern methods)	29%	(MICS 2010)	**37.5%**	(DHS 2013)	↑
11	**Contraceptive prevalence rate** (% of women aged 15-49 in a marriage or union who (or who's partner) are using at least 1 method of contraception)	11%	(MICS 2010)	**16.6%**	(DHS 2013)	↑
12a	**Antenatal care coverage** (% of total (estimated) pregnant women attending ANC 4+)	68.1% 65.2% 75%	(DHIS2 2015) (DHIS2 2014) (MICS 2010)	**65.6%** **76.0%**	(DHIS2 2016) (DHS 2013)	↓
12b	**Antenatal care coverage** (% of total (estimated) pregnant women attending ANC 1+)	90% 88.3%	(DHIS2 2015) (DHIS2 2016)	**88.6%**	(DHIS2 2016)	↔
13a	**Births attended by skilled health personnel** (% deliveries attended by a doctor, SRN, or midwife)	*	*	**Min:[17] 8.4%** **Max:[18] 10%**	(DHIS2 2016) (DHIS2 2016)	*
13b	**Births attended by skilled health personnel** (% deliveries attended by Dr, SRN, m/w, CHO, SECHN, MCH aide)	* 62%	* (MICS 2010)	**Min:[17] 72.8%** **Max:[18] 87.0%** **59.7%**	(DHIS2 2016) (DHIS2 2016) (DHS 2013)	*
14a	**Postpartum care coverage** (% women receiving 1st postpartum contact within 48h)	* 57.5%	* (DHS 2008)	**Min:[19] 82.7%** **Max:[20] 98.8%** **72.7%**	(DHIS2 2016) (DHIS2 2016) (DHS 2013)	*
14b	**Postpartum care coverage** (% neonates receiving 1st postpartum contact within 48h)	*	*	**Min:[19] 74.1%** **Max:[20] 88.6%** **38.7%**	(DHIS2 2016) (DHIS2 2016) (DHS 2013)	*

**indicates data not submitted.*

Note, for some of these indicators there are several different estimates provided for the same numerators and denominators across different reports and spreadsheets submitted by DRCH. This has made calculating values for these indicators problematic. In future years, DRCH could facilitate this process by developing an 'official' list of relevant data and values, including denominators such as number of pregnant women by district, number of deliveries by district, number of live births by district; and numerators such as ANC1+, ANC4+, births attended by cadre; and PNC coverage for mothers and newborns.

[14] For impact indicators, the most recent estimates include both the UN estimates for 2015 and the DHS 2013 estimates. This is because the MoHS currently uses both in its routine work and publications. For outcome and output indicators, there are no UN estimates so only the most recent programme data and/or survey data are included under 'most recent estimates', with older survey and programme data under 'previous estimates'.
[15] The LDC (*) comparison countries are a subset of the 'Least Developed Countries' (LDC) group of low-income economies (according to World Bank definitions) - specifically the 29 countries with a GDP / capita of <$1,000 (USD PPP). This column shows whether Sierra Leone is in the top quarter, second quarter, third quarter, or bottom quarter of countries in terms of performance across these indicators.
[16] UN modelled estimate shows that MMR is falling, but the survey estimates from 2008 to 2013 show a rise - therefore marked amber.
[17] Source: numerator - number of deliveries attended - from DHIS-2 (MDSR Annual Report 2016); denominator - total number of live births - estimated from Crude Birth Rate of 35.7/1,000 population (DHS 2013)
[18] Source: numerator - number of deliveries attended - from DHIS-2 (MDSR Annual Report 2016); denominator - total number of live births - from DHIS-2 (MDSR Annual Report 2016)
[19] Source: numerator - number receiving first contact within 48h - from DHIS-2; denominator - total number of live births - estimated from Crude Birth Rate of 35.7/1,000 population (DHS 2013)
[20] Source: numerator - number receiving first contact within 48h - from DHIS-2; denominator - total number of live births - from DHIS-2 (MDSR Annual Report 2016)

	Indicator	Previous estimates		Most recent estimates		Trend
Outcome and output indicators (core RMNCH areas cont.)						
15	**Care-seeking for symptoms of pneumonia** (% of children <5 with suspected pneumonia in the 2 weeks preceding the survey taken to a HF)	74.0%	(MICS 2010)	**71.7%**	(DHS 2013)	↔
16	**Children with diarrhoea receiving ORS** (% of children <5 with diarrhoea in the 2 weeks preceding the survey receiving ORS)	72.6%	(MICS 2010)	**85.1%**	(DHS 2013)	↑
17	**Vitamin A supplementation coverage** (% children receiving 2 age-appropriate doses of vitamin A in the past 12 months)	* 91%	* (MICS 2010)	**99.98%**[21] **83%**	(EPI 2016) (DHS 2013)	*
18	**Immunisation coverage rate** (% of target population receiving the last recommended dose)[22]					
18a	■ Fully immunised child	82% 54%	(EPI 2015) (Census 2015)	**88%**	(EPI 2016)	↑
18b	■ BCG (TB)	89%	(EPI 2015)	**91%**	(EPI 2016)	↑
18c	■ Penta 3 (DTaP/HiB/HBV)	86%	(EPI 2015)	**98%**	(EPI 2016)	↑
18d	■ OPV 3 (polio)	85%	(EPI 2015)	**98%**	(EPI 2016)	↑
18e	■ Measles	82%	(EPI 2015)	**97%**	(EPI 2016)	↑
18f	■ MCV2 (measles second dose)	79%	(EPI 2015)	**33%**	(EPI 2016)	↓
18g	■ Yellow fever	82%	(EPI 2015)	**88%**	(EPI 2016)	↑
18h	■ Tetanus toxoid (at ANC)	105%	(EPI 2015)	**91%**	(EPI 2016)	↔[23]
19	**Condom use at last sex with high-risk partner** (% using condom at last sex with high risk partner)	9.6% (F) 22.4% (M)	(DHS 2008)	**6.8% (F) 17.7% (M)**	(DHS 2013)	↓
20	**Intimate partner violence prevalence** (% currently partnered women aged 15-49 who've experienced violence by their current intimate partner in last 12 months)	N/A	N/A	**45.3%**	(DHS 2013)	*
21	**Institutional maternal mortality ratio** (% institutional deliveries resulting in maternal deaths)	*	*	**Min:**[24] **0.25%** **Max:**[24] **0.29%**	(DHIS2 2016) (DHIS2 2016)	*
22	**Maternal death review coverage (%)** (% of reported maternal deaths reviewed)	*	*	**95%**[25]	(MDSR 2016)	*
23	Obstetric and gynaecological admissions owing to abortion[26]	N/A		N/A		
24	Cervical cancer screening	N/A		N/A		

	Indicator	Prev estimates		Most recent estimates		Trend
Outcome and output indicators (RMNCH-related nutrition areas)						
25	**Children under 5 years who are stunted** (% of children under 5 years with height-for-age >2 SD below median)	38% 44%	(DHS 2013) (MICS 2010)	**28.8%**	(NNS 2014)	↓
26	**Children under 5 years who are wasted** (% of children under 5 years with weight-for-height >2 SD below median)	9% 8%	(DHS 2013) (MICS 2010)	**4.7%**	(NNS 2014)	↓
27	**Children aged under 5 years who are overweight** (% of children aged 0-59 months with weight-for-height >2 SD above md.)	5.2% 9.6%	(DHS 2013) (MICS 2010)	**2.2%**	(NNS 2014)	↓
28	**Incidence of low birth weight among newborns** (% of live births weighing less than 2,500g)	* 10%	* (MICS 2010)	**2-2.2%** **5%**	(DHIS2 2016)[27] (SLMS 2013)	↓
29	**Early initiation of breastfeeding**[28] (% of infants breastfed within 1hr of birth)	66% 45%	(SLMS 2013) (MICS 2010)	**54.9%**	(NNS 2014)	↓
30	**Exclusive breastfeeding rate in infants 0-5 months of age** (% infants <6 months of age fed exclusively with breastmilk)	41.9% 32%	(SLMS 2013) (MICS 2010)	**58.8 %**	(NNS 2014)	↑
31	**Anaemia prevalence in children** (% of children aged 6-59 months with Hb <11 g/L)	76%	(DHS 2008)	**76.3%** **79.9%**	(SLMS 2013) (DHS 2013)	↔
32a	**Anaemia prevalence in non-pregnant women of reproductive age** (% of women aged 15-49 with Hb <12 g/L)	43.1%	(DHS 2008)	**44.8%** **42.2%**	(SLMS 2013) (DHS 2013)	↔
32b	**Anaemia prevalence in pregnant women of reproductive age** (% of pregnant women aged 15-49 with Hb <11 g/L)	62.3%	(DHS 2008)	**70%** **54%**	(SLMS 2013) (DHS 2013)	↔

[21] Source: EPI data from the Child Health / Expanded Programme on Immunisation Annual Report 2016. The figure comes from the number of children aged 6-59 months who received vitamin A supplementation (VAS) in both MCHWs, and therefore assumes that of those children that received VAS in the 2nd MCHW, 100% were among those receiving VAS in the 1st MCHW. The data uses a population denominator for aged 6-59 months of 1,356,795, but it should be noted that the census 2015 figure for 0-59 months was only 1,180,795. According to the census figure, the coverage would therefore be significantly higher than 100%.
[22] Source: EPI data from the Report on 2016 Annual EPI Review Meeting at YWCA Freetown. Note that a measles reactive campaign took place in April - May 2016, and 97.3% of children aged 6-179 months were vaccinated during the campaign according to the independent monitor's report.
[23] NB: The trend is down from 2015, but the performance is still good.
[24] Source: numerator - number of institutional maternal deaths - from MDSR Annual Report; denominator - number of institutional deliveries - from the lowest estimate from the Reproductive Health and Family Planning Annual Report 2016 (185,016) to the highest estimate from the MDSR Annual Report 2016 (216,678)
[25] Source: MDSR Annual Report. Note that the actual indicator definition is for 'facility maternal deaths', but this data point is for all reported maternal deaths, of which 80.3% took place in health facilities.
[26] There was judged to be insufficient data to calculate this statistic, however it would be theoretically possible to provide this in future years if data collection and reporting was improved.
[27] Source: numerator - number of newborns weighing <2500g at birth - from DHIS-2; denominator - total number of live births (min) or total number of live births weighed (max) within 24h - from DHIS-2
[28] Note: data on this indicator are routinely collected through DHIS-2, however the figure from 2016 of 9% and 2015 of 8% are indicate that these data are of poor quality, and are therefore not included here.

	Indicator	Previous estimates		Most recent estimates		Trend
Outcome and output indicators (RMNCH-related WASH and environmental health areas)						
33	**Population using safely managed drinking-water services** (% of whole population using safely-managed drinking water services)	65.5% 59.5% 57.3%	(NNS 2014) (DHS 2013) (MIS 2013)	**69.5%**	(MIS 2016)	↑
34	**Population using safely managed sanitation services** (% of whole population using safely-managed sanitation services)	9.8% 10.6% 12.1%	(NNS 2014) (DHS 2013) (MIS 2013)	**16.8%**	(MIS 2016)	↑
35	**Population using modern fuels for cooking / heating / lighting** (% of total households using modern fuels)	1.8% 1.0%	(DHS 2013) (MIS 2013)	**1.3%**	(MIS 2016)	↔
36	**Air pollution levels in cities (µg/m^3)** (Annual mean concentration of PM2.5 particulate matter)	25.3	(GBD 2010)	**19.3** **17.1**	(GBD 2015)[29] (WHO 2014)	↓

	Indicator	Previous estimates		Most recent estimates		Trend
Outcome and output indicators (RMNCH-related malaria, HIV/AIDS, and NTD areas)						
37	**Malaria parasite prevalence among children aged 6-59 months** (% children aged 6-59 months testing +ve for malaria parasites in blood)	42.9%	(MIS 2013)	**40.1%**	(MIS 2016)	↓
38a	**Intermittent preventive therapy for malaria in pregnancy (IPTp3+)** (% of pregnant women receiving 3+ doses of IPT during ANC visits)	*	*	**31.0%**	(MIS 2016)	N/A
38b	**Intermittent preventive therapy for malaria in pregnancy (IPTp2+)** (% of pregnant women receiving 2+ doses of IPT during ANC visits)	73.6% 61.7% 45.1%	(NMCP 2015) (MIS 2013) (DHS 2013)	**80.5%** **71.3%**	(NMCP 2016) (MIS 2016)	↑
39a	**Use of insecticide treated nets (ITNs) by under 5s** (% of under 5s who slept under an ITN the previous night)	45.0% 49.0%	(MIS 2013) (DHS 2013)	**44.1%**	(MIS 2016)	↔
39b	**Use of insecticide treated nets (ITNs) by pregnant women** (% of pregnant women who slept under an ITN the previous night)	47.1% 52.6%	(MIS 2013) (DHS 2013)	**44.0%**	(MIS 2016)	↓
40	**Appropriate treatment among children treated for malaria** (% children <5 with fever receiving any antimalarial who received ACT)	83.9% 77.1%	(MIS 2013) (DHS 2013)	**96.5%**	(MIS 2016)	↑
41	**Indoor residual spraying (IRS) coverage** (% households at risk protected by IRS)	*	*	**4.8%** **5.8%**	(DHS 2013) (MIS 2013)	N/A
42	**Coverage of preventative therapy for soil-transmitted helminths** (% of population requiring preventative albendazole receiving it)	*	*	**100.6%**	(EPI 2016)	
43	**Prevention of mother-to-child transmission (PMTCT)** (% of HIV +ve pregnant women receiving ART for PMTCT)	84.6%	(UNAIDS 2014)	**83.4%**	(UNAIDS 2015)	↔

[29] Source: Brauer, M. et al. 2016, for the Global Burden of Disease Study 2015.

Data visualisations

Reproductive health and family planning

Figure 27: Trends in coverage of ANC 1+ ANC 4+, 2014-16

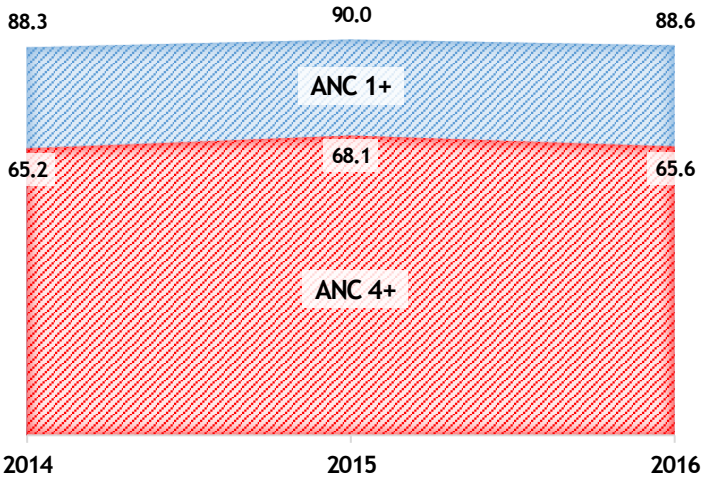


Figure 28: Percentage of pregnant women receiving at least 1 ANC check, 2015 (left) and 2016 (right)

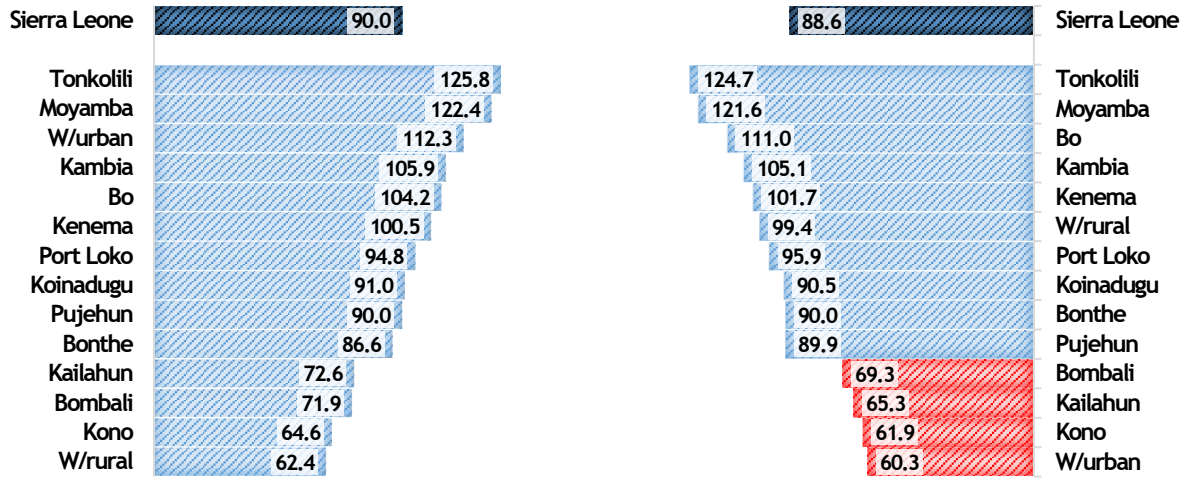


Figure 29: Percentage of pregnant women receiving at last 4 ANC checks, 2015 (left) and 2016 (right)

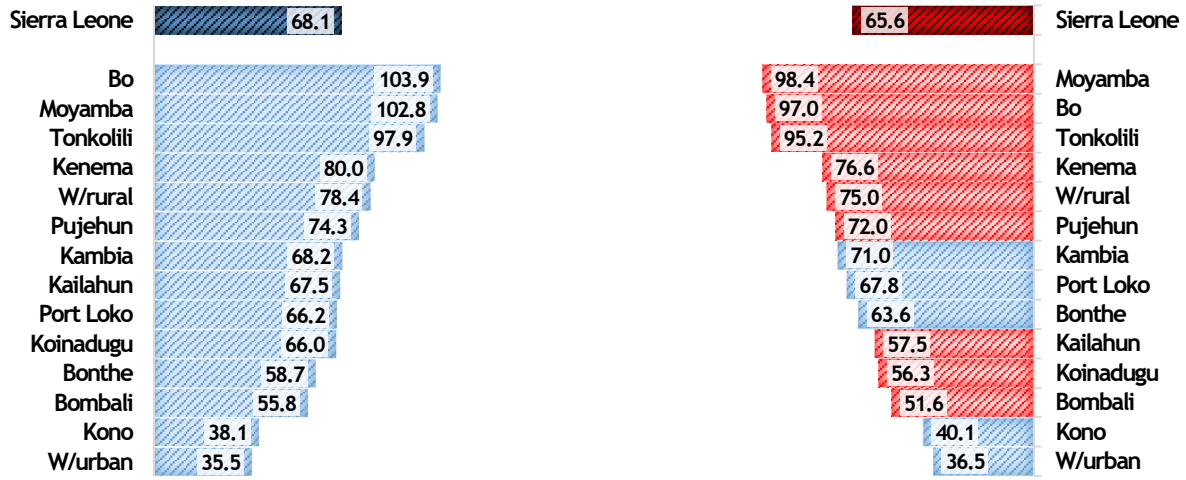


Figure 30: Percentage of women with live births receiving postnatal checks within 48h, 2016 (left) and percentage of neonates receiving postnatal checks within 48h, 2016 (right)

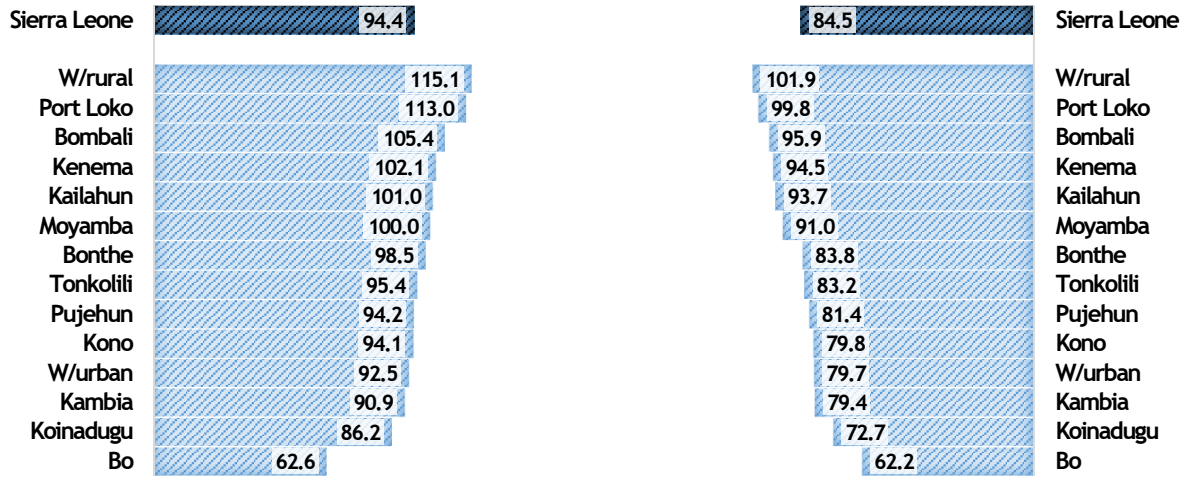


Figure 31: Number of reported maternal deaths per 100,000 live births (and % of expected), 2016

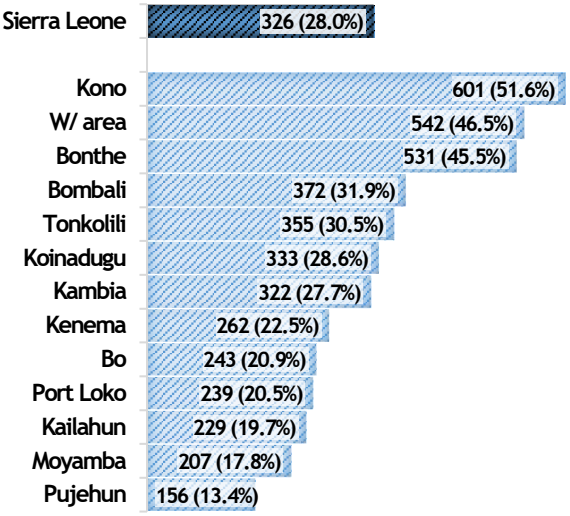
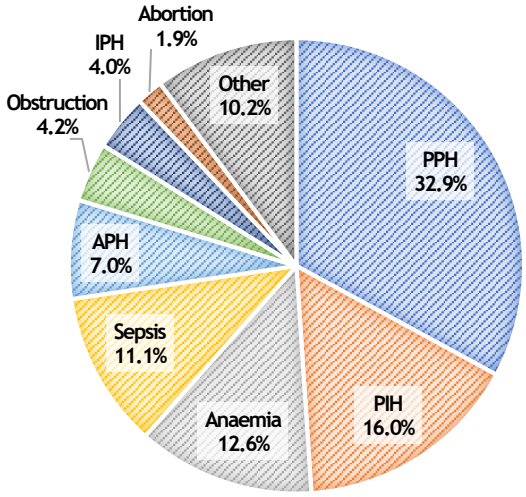


Figure 32: Causes of maternal deaths as recorded by MDSR, 2016[30]



[30] Source: MDSR programme data (MDSR Annual Report 2016). PPH: postpartum haemorrhage; PIH: pregnancy-induced hypertension; APH: antepartum haemorrhage; IPH: intrapartum haemorrhage

Figure 33: Total number of new and continuing clients by contraceptive method, 2015 (left), and 2016 (right) [31]

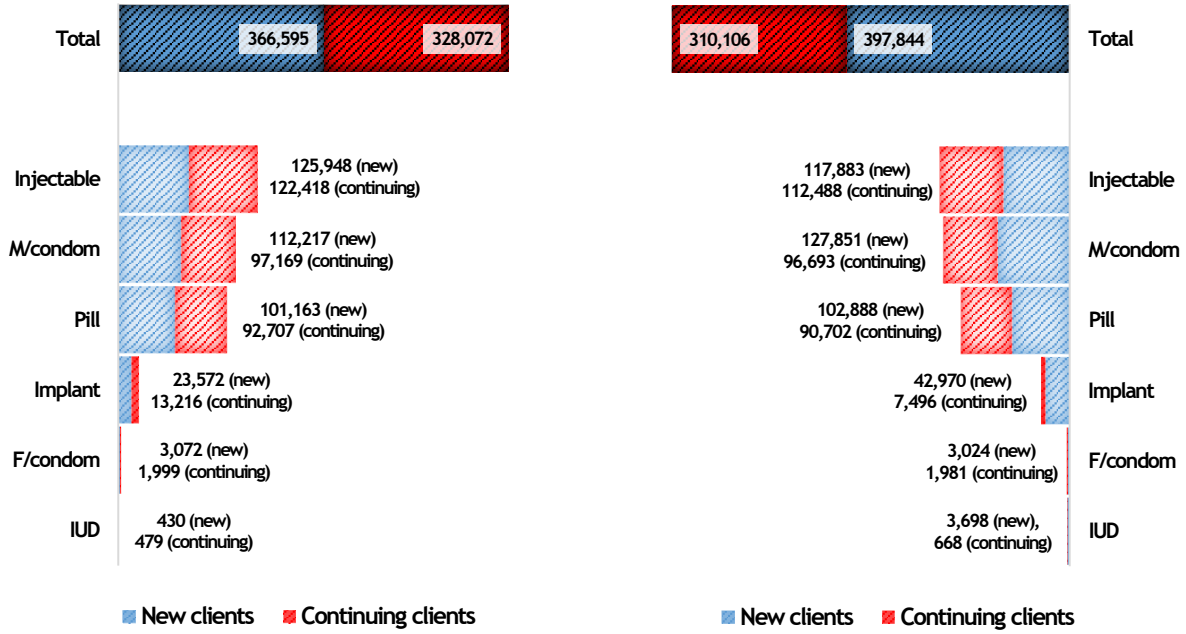


Figure 34: Number of family planning clients per 1,000 women aged 15-49 by district, 2015 (left), and 2016 (right)[32]

[31] Source: FP programme data submitted by DRCH to DPPI; NB: if a single client accessed two different methods, e.g. a barrier method and a LARC, then this is counted as two clients.
[32] Source: FP programme data submitted by DRCH to DPPI; NB: if a single client accessed two different methods, e.g. a barrier method and a LARC, then this is counted as two clients.

Expanded Programme on Immunisations (EPI)

Figure 35: Trends in coverage of key immunisations 2014-16[33]

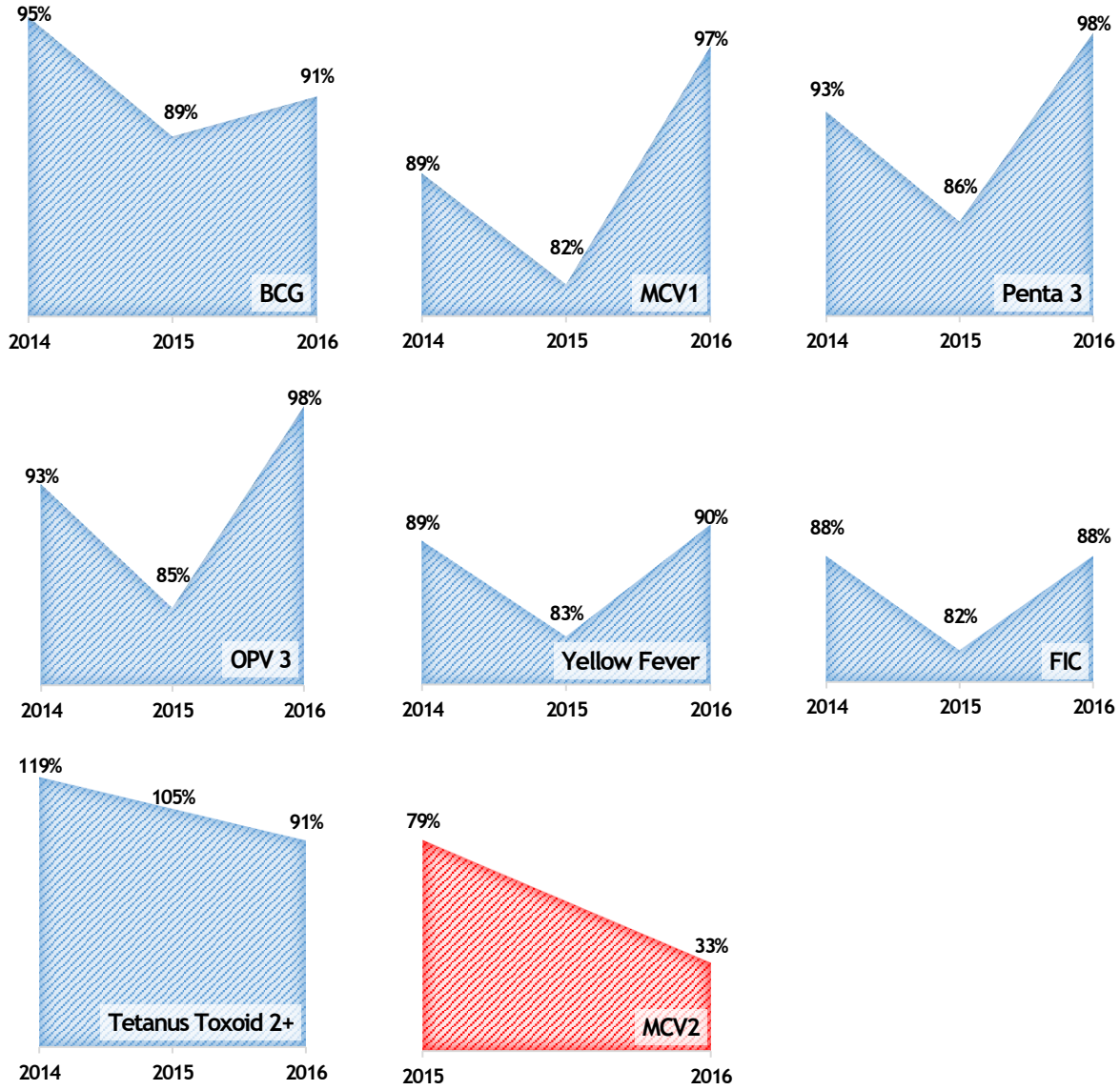
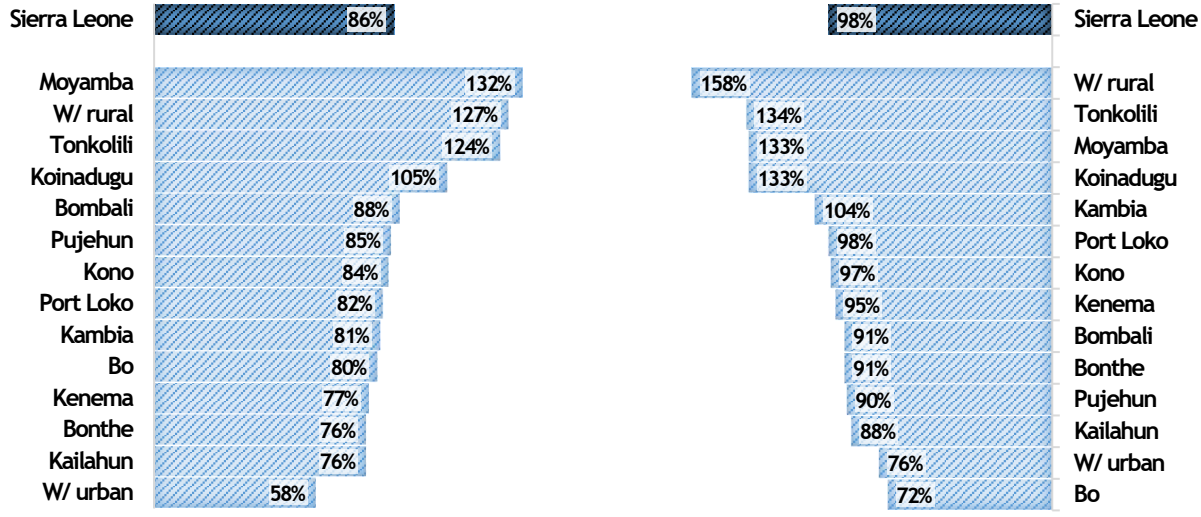


Figure 36: Penta-3 coverage (tracer indicator for district immunisation coverage) by district, 2015-16[27]



[33] Source: EPI programme data (Report on 2016 Annual EPI Review Meeting)

Summary of performance across indicators

There have been no surveys capturing data on RMNCH impact indicators since DHS 2013, and therefore data on these indicators are only a crude estimate of the performance of Sierra Leone to 2016. The MICS 2017 data will hopefully be available in time for next year's performance report, and this will provide a clear update on progress in recent years. Nonetheless, the available data show us that whilst Sierra Leone is moving in the right direction across the key impact areas of maternal and child mortality, there is still a great deal of work to be done as evidenced by its performance relative to countries at a similar level of development. Further analysis of these impact indicators is provided in the chapter 'High-level impact indicators' earlier in this report.

On pregnancy-related care, the country has stable rates of ANC1+ coverage and ANC4+ coverage from both survey and programme data, though programme data shows a slight fall in coverage from 2015 to 2016 and there is still significant room for improvement, particularly in ANC4+ coverage. Coverage of postpartum care within 48h in 2016 was good at over 90% for women and approximately 85% for neonates, but insufficient data was submitted to be able to analyse the trend over recent years. There is a wide variation of performance in these indicators across districts, and plans of action will need to be put in place by national and DHMT staff to both narrow this gap and sustain and improve performance at the top end. What this data doesn't capture is that these high coverage rates are not consistent with the child and maternal mortality rates in the country – and therefore the quality of service delivery must be very poor. The 2017 SARA survey should hopefully shed some light on this issue as it contains a quality of care module on RMNCH services, but this is an area that requires significant attention.

A complete analysis of maternal deaths across the districts is provided in the MDSR annual report, so only a brief comment is included here. There is a wide variation in standardised maternal mortality across the districts, though this may be down to either differences in effectively capturing maternal deaths in the community, or truly different rates. Figure 31 shows both the maternal deaths recorded through the MDSR system per 100,000 live births across each of the districts, and the proportion of modelled maternal mortality that these figures represent. It clearly shows that whilst at first glance Kono (601 deaths per 100,000 live births) has a higher maternal mortality than Pujehun (156 deaths per 100,000 live births), compared to the modelled estimates this would indicate that Kono has captured 51.6% of maternal deaths and Pujehun has only captured 13.4%. Accordingly, extreme caution is needed in interpreting regional variation in maternal mortality in Sierra Leone as recorded by the MDSR system. In contrast, zero caution is required in interpreting the analysis that maternal mortality is far too high in the country, and significant and sustained action is needed across all sectors and across the whole country to tackle this.

On family planning, the country is continuing to make good progress. The trend from survey data to 2013 shows that both demand for family planning satisfied by modern methods and the contraceptive prevalence rate is improving. The trend from programme data shows that the total number of family planning clients rose slightly from 694,667 in 2015 to 707,950 in 2016, which works out at approximately 378 clients per 1,000 women aged 15-49 in 2015 rising to 386 clients per 1,000 women aged 15-49 in 2016. The most popular methods remain injectables, male condoms, and oral contraceptive pills, but there was also a substantial rise in the number of new implants and IUDs fitted in 2016 which is very good news. Digging down to district level, the data from Moyamba suggests that it is providing very high coverage of family planning services, with most of the other districts providing a lower coverage rate. There is significant year-to-year variability in district performance, with Western Urban providing significantly lower coverage in 2016 than 2015, and Bonthe providing significantly higher coverage. Meeting the need for family planning is a highly cost-effective intervention that has enormous benefits to health as well as social and economic benefits more widely, and so additional efforts should be placed on ensuring that these services are scaled up and best practice, including on demand generation, is shared across the districts.

On immunisation coverage, the programme data clearly shows that following a dip in coverage across all vaccines from 2014 to 2015, performance has again improved in 2016 with national coverage reaching >90% across most vaccines. The clear exception to this was the second measles dose (MCV2), where coverage dropped from 79% to 33%. Again, there is significant variation across districts as illustrated by the tracer 'Penta-3 coverage' indicator, and the MoHS needs to continue to work on this going forwards. However, the coverage figures by district also show that there is a major issue with data quality with coverage in some districts well in excess of 100% – and it is therefore difficult to draw firm conclusions from the data as they are.

Of course, there can be no improvement in RMNCH outcomes without improvement in major risk factors for maternal and child mortality – including nutrition, WASH, and environmental health; and in the prevention and management of major infectious diseases – including malaria, HIV/AIDS and NTDs. A comprehensive analysis of these indicators is provided in the relevant chapters, but a brief summary of performance is included here.

The trend from survey data to 2014 shows that nutrition is improving in most areas, including the prevalence of stunting and wasting, though the data indicates that we are falling behind in the early initiation of breastfeeding. Furthermore, survey data to 2013 shows that performance in tackling anaemia in women and children is broadly static.

Survey data to 2016 shows that access to clean water and sanitation is likewise improving, though remains far too low – particularly for sanitation. The use of modern fuels in the home remains also catastrophically low at less than 2% of the population. Both WASH and air pollution therefore remain major causes for child ill-health and mortality in Sierra Leone through their contribution to high levels of diarrhoea and respiratory disease.

Finally, survey data to 2016 shows a mixed picture for the infectious disease indicators related to RMNCH outcomes. Whilst appropriate management of malaria in children under 5 and coverage of IPTp is improving, the use of ITNs by pregnant women is falling and children under 5 is static. Similarly, coverage of PMTCT for HIV-positive mothers also remains static.

Key activities relating to RMNCH in 2016

This section will provide an outline of the key activities related to RMCNH in 2016. A more comprehensive overview is available in programme annual reports. Activities on RMNCH-related areas highlighted in this chapter, but carried out by other Directorates, are covered in those respective chapters.

RMNCH governance-related activities

Review of the RNCH policy and strategic plan 2011 – 2015

As the RNCH policy and strategic plan came to an end in 2015, a review exercise was undertaken to assess the achievements and challenges over the period, as well as provide a way forwards. The review process involved desk review, primary qualitative research to gather data from key stakeholders including a consultative workshop, and data collection on the availability of RMNCH health interventions across the 13 districts. The final report was completed on time with recommendations for areas to be prioritised in the new strategy.

Inception of the RMNCAH policy and strategic plan 2017 – 2021

Building on the review of the previous strategy, the groundwork was laid for the next 5-year strategy. This included holding a consultative workshop for the development of the new policy and strategy bringing together a wide range of stakeholders from within Sierra Leone; from across the West African region; and from international development partners. The activities in this area for 2016 culminated in the production of a zero-draft strategy in line with the projected timeline for a completed, costed strategy by Q2 2017.

Inception of the newborn care strategy

In anticipation of the development of the planned newborn care strategy linked to the Global Every Newborn Action Plan (GENAP) in 2017, a consultative workshop on newborn health took place in 2016. This resulted in a report on the bottlenecks to scale-up of quality newborn care, as well as a summary of inputs and recommendations to be used in the development of the strategy in 2017.

RCH Technical Coordinating Committee (TCC) meetings

The RCH TCC is a quarterly multi-stakeholder meeting that is the primary forum for ensuring coordinated planning, implementation, and monitoring of RMNCAH activities taking place in Sierra Leone. It therefore fulfils a critical governance function, allowing the Director of RCH ensures that the MoHS exerts its stewardship function over all RMNCAH activities taking place – whether through governmental or non-governmental bodies – as well as ensuring that the Government and all partners are kept updated on progress across the multiplicity of activities in this fast-moving sector. All four meetings took place successfully in 2016.

Cross-cutting monitoring, supervision, and training of health workers

Updated modules on EmONC, PNC, family planning, adolescent health, and basic nutrition were rolled out in 13 districts, with 1,961 health workers completing all five modules and developing their knowledge and skills across these key RMNCAH areas.

Supportive supervision including mentoring and coaching on the delivery of quality RMNCAH interventions took place across 13 government hospitals. The purpose of this process is to assist health workers to continually improve their own work performance, including through the identification of key skills / knowledge gaps. This process has made a strong contribution to restoring the competency and confidence of health workers in delivering life-saving interventions including the clinical management of obstetric complications. 3 follow-up supportive supervision visits also took place in 2016 to provide moral and technical support to health workers through on-the-job training (OJT), as well as to ascertain if the knowledge and skills are put into practice. Finally, mentoring was conducted across all 78 EmONC centres in Sierra Leone.

Family planning

In addition to the distribution of FP commodities and the provision of FP services at provider sites across Sierra Leone, with support from development partners the FP programme also trained 412 HCWs on implant insertion and removal, and 100 HCWs on insertion and removal of the intrauterine device (IUD). Supportive supervision on long-term family planning methods was also conducted across all districts.

Support was also provided to enable the renovation and rehabilitation of 69 family planning service delivery points in PHUs across Sierra Leone, providing a much-needed boost to the equitable provision of high quality family planning services.

Finally, to ensure effective coordination and governance of FP activities across Sierra Leone, four FP coordination meetings were held in 2016, bringing together MoHS and development partners working in family planning. A major function of these meetings was to disseminate information on stock levels of reproductive health and family planning commodities, discuss recommendations, and to monitoring progress on implementation of these recommendations.

Maternity and obstetric care

In addition to the provision of routine antenatal care (ANC), deliveries, and postnatal care (PNC) to pregnant women across Sierra Leone, there is a continual push for the improvement of emergency obstetric and newborn care to reduce morbidity and mortality in these key groups.

A key activity in this regard is the bi-annual FIT assessments. These involve a robust, standardised assessment of the 65 designated 'basic emergency obstetric and newborn care' units (BEmONCs) and the 13 'comprehensive emergency obstetric and newborn care' units (CEmONCs). Following the assessments, gaps are identified and recommendations for improvement are made, with following assessments monitoring progress against these recommendations. In 2016, in addition to carrying out FIT assessments in July and December, the assessment tools themselves were reviewed and updated.

In terms of training, in addition to the broad training highlighted above, 78 additional midwives received further training in EmONC. During the year, an in-depth analysis of all EmONC training manuals in Sierra Leone also took place, resulting in a single, harmonised training manual to be used for all future EmONC training.

In terms of facility strengthening, 2016 saw the rehabilitation of 5 BEmONCs (Waterloo, Mapotorlon, Taiama, Pendembu, and Baomakoya CHCs) and 4 CEmONCs (PCMH, and Bo, Lungi, and Kenema Government Hospitals) – strengthening the capacity to provide quality RMNCAH services in Sierra Leone.

2016 also saw a strong focus on pregnant teenagers – with MoHS working together with the Ministry of Social Welfare, Gender, and Children's Affairs and the Ministry of education. In total, 23,271 teenagers received specialised services through health facilities and outreach services in 2016. Additionally, 28 HCWs were trained on providing services for pregnant schoolgirls (including counselling and information, ANC, delivery, PNC and FP) to support the delivery of quality care to this group.

Maternal Death Surveillance and Response (MDSR)

The MDSR system tracks the number of maternal deaths in Sierra Leone, and provides information about the underlying contributing factors and how they can be tackled – how many die, where they die, and why they die. In 2016, the system was further strengthened through training at the district and hospital level – for MDSR committees, M&E officers, and health workers including midwives and CHWs – as well as sensitisation activities with women's groups and professional bodies. Furthermore, bimonthly meetings took place across all 13 districts, and monthly meetings took place across 27 hospitals.

Overall, 100% of districts had MDSR committees with MDSR coordinators that met regularly, 73% of suspected maternal deaths had verbal autopsies conducted, and 95% of notified maternal deaths were reviewed by the district MDSR committees in 2016. There were 706 deaths reported in 2016 as against 456 in 2015 and 226 in 2014.

Child health and Expanded Programme on Immunisations

The CH/EPI programme is one of the oldest in the MoHS, being established in 1978 – and as a well-established programme typically undertakes a large number of activities in this crucially important area in addition to the core competence of logistics and delivery of routine immunisation services across all districts.

On additional immunisations, four rounds of polio national immunisation days (NIDs) were conducted, reaching >96% coverage in children aged 0-59 months on all 4 days, and >98% coverage on 3 out of 4 days. This year also saw the successful switch from trivalent oral polio vaccine to bivalent polio vaccine. A measles reactive campaign was conducted during April – May 2016, with the post-campaign survey showing national coverage of 97.7% and district coverage of >92.6%; and the independent monitors' report showing national coverage of 97.3% and district coverage of >95.8%. Two maternal and child health weeks (MCHWs) were

successfully delivered, including the delivery of vitamin A and albendazole to almost 100% of the target population; as well as one African vaccination week (AVW). Finally, two sets of 'periodic intensification of routine immunisation' took place in 8 districts.

A range of training activities were also conducted: 709 HCWs were trained on integrated management of neonatal and childhood illnesses (IMNCI); and all districts received training on cold-chain management including refresher training for district cold-chain technicians, vaccine management and the RED approach. Supportive supervision was also undertaken to improve the quality of EPI activities, and districts were supported to conduct outreach activities and defaulter tracing.

Finally, on equipment and maintenance, cold chain maintenance was conducted at all levels, and over 100 solar direct drive refrigerators were installed nationwide.

Key challenges in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- Competing activities in the districts combined with the limited number of supervisors available led to delays in implementation.
- Inadequate logistical support / vehicles for implementation of activities was a challenge – particularly for monitoring and supervision visits. DRCH was beset by both high maintenance costs for their vehicles and frequent breakdowns. Additionally, the old computing equipment frequently breaks down.
- Whilst the FIT assessments continue to be an effective tool to improve facility readiness to deliver EmONC services, there is an ongoing challenge of delays in responding to the findings of the FIT reports across the system – at the national level, by DHMTs, and by development partners.
- Regarding drugs and supplies, insufficient availability of instruments for IUD insertion and removal; delayed stock replenishment of contraceptives at PHUs; drugs for the management of obstetric emergencies, STIs and side effects not available for free; and limited availability of basic equipment following training, e.g. BP machines, PAC kits, gloves, delivery kits, and others.
- Difficulties with training included inadequate length of training to effectively deliver outcomes (e.g. 2 days for insertion of implants) and insufficient supportive supervision; difficulties in transporting participants between districts; and limited availability of training manuals (e.g. for EmONC).
- Inadequate number of and use of data collection tools, as well as late reporting of data (both delayed and incomplete data) from districts to the national level.
- Difficulty accessing allocated GoSL funds and late disbursement of donor funds leading to delayed implementation.
- Lack of community understanding of key areas of RMNCAH service delivery.
- Lack of multisectoral collaboration and investment for response – including road access, transporation, and communication.
- Broad systems-wide challenges related to limited capacity in the health system across structures (including internet access and computing equipment), staff (inadequate support to train effective numbers of staff and inequitable distribution across districts), and supplies.
- Insufficient information, education, and communication materials for awareness across different programme areas including EPI

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed activities and actions for 2017 relating to RMNCAH include:

- For the Child Health / EPI programme to:
  - Implement the comprehensive multi-year plan (cMYP), implement the recommendations of the Effective Vaccine Management Improvement Plan; conduct an external comprehensive EPI review and EPI coverage survey; conduct a comprehensive cold chain assessment; and develop a data quality improvement plan.
  - Improve the provision of logistics and supplies to enable effective routine immunisation activities, including expanding cold stores and replacing obsolete solar refrigerators; continue outreach services and defaulter training activities; and conduct 3 rounds of NIDs and 2 MCHWs.
  - Intensify the provision of supportive supervision and on-the-job training.
  - Develop sensitive IEC materials and reactivate social mobilisation at all levels.
  - Continue to provide community IMNCI in areas where facility IMNCI is already established; advocate for scaling up of IMNCI at the district and national level; and conduct follow-up training of IMNCI trained staff.
  - Advocate for MoHS and development partners to disburse funds in a timely fashion.
- For the family planning programme / reproductive health and MDSR programmes to:
  - Increase the number of HCWs trained on facilitation, Jadelle and IUD insertion / removal, and support the institutionalisation of competency-based training in EmONCs.
  - Continue and expand the provision of supportive supervision and mentoring.
  - Ensure a more effective supply of drugs and the availability of essential equipment for RMNCAH services in line with the findings from facility assessments.
  - Conduct outreach activities to reach hard-to-reach communities.
  - Strengthen community engagement, particularly around the importance of reporting deaths related to pregnancy and the benefits of accessing health facilities for RMNCAH services.
  - Increase the level of technical support and logistical support to the programme to facilitate more effective programme delivery.
  - Strengthen multi-sectoral coordination, collaboration, and integration where feasible.
  - Advocate for MoHS and development partners to disburse funds in a timely fashion, as well as for MoHS to increase the support for programming to reduce reliance on development partners.

Area 2: Malaria

Introduction

Malaria is the single largest contributor to death and disability in Sierra Leone, particularly in children under 5. It is endemic across the whole country, with stable transmission throughout the year, peaking in the rainy season. Recent facility data indicates that malaria accounts for 40% of outpatient morbidity across all ages, 47% of outpatient morbidity for children under 5, 38% of hospital admissions, and has a case fatality rate of 17.6%. Therefore, there can be no real improvement in infant and under-5 mortality – or indeed morbidity and mortality in any age group – without major progress in tackling malaria.

Malaria is not only a health challenge – through its impact and the costs that it imposes at the individual, household, and society levels, it is a major threat to socio-economic development in Sierra Leone. Households in Africa spend between $2-25 on treatment and $15-20 on prevention each month, or 3% of annual income. In addition to this, costs include lost days of work, with an estimated 7-12 days on average lost per episode of malaria; absence from school and impaired learning and cognitive abilities in children; and expenses for burials in case of death. Accordingly, malaria has been identified as a major health and socio-economic burden by the Government of Sierra Leone (GoSL).

The good news is that malaria is both preventable and treatable. To this end, the National Malaria Control Programme (NMCP) in the Directorate of Disease Prevention and Control (DDPC) distributes insecticide-treated nets (ITNs), supports the provision of intermittent preventative therapy for malaria in pregnancy (IPTp), and ensures the use of effective diagnostics and treatment for malaria with artemisinin-based combination therapy (ACT).

This chapter will outline performance across key indicators related to malaria, highlight the major activities and challenges faced by NMCP in 2016, and provide a brief look forwards to 2017.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	**Malaria incidence rate** (number of confirmed reported malaria cases per 1,000 persons per year)	*	*	**229.4**	(IDSR 2016)[34]	*
2	**Malaria parasite prevalence among children aged 6-59 months** (% of children 6-59 months with malaria parasites in blood on microscopy)	42.9%	(MIS 2013)	**40.1%**	(MIS 2016)	↓
3	**Treatment of confirmed malaria cases**[35] (% confirmed malaria cases that receive first line antimalarial treatment)	97.3%	(NMCP 2015)	**95.3%**	(NMCP 2016)	↔
4	**Anaemia prevalence in children** (% of children 6-59 months with a Hb level of <11 g/dL)	76%	(DHS 2008)	**76.3%** **79.9%**	(SLMS 2013) (DHS 2013)	↔
5a	**Anaemia prevalence in non-pregnant women of reproductive age** (% of non-pregnant women aged 15-49 with a Hb level of <12 g/dL)	43.1%	(DHS 2008)	**44.8%** **42.2%**	(SLMS 2013) (DHS 2013)	↔
5b	**Anaemia prevalence in pregnant women of reproductive age** (% of pregnant women aged 15-49 with a Hb level of <11 g/dL)	62.3%	(DHS 2008)	**70%** **54%**	(SLMS 2013) (DHS 2013)	↔
6a	**Intermittent preventative therapy for malaria in pregnancy (IPTp2+)** (% women receiving 2+ doses of IPTp during ANC during last pregnancy)	73.6% 61.7% 45.1%	(NMCP 2015)[2] (MIS 2013) (DHS 2013)	**80.5%** **71.3%**	(NMCP 2016)[36] (MIS 2016)	↑
6b	**Intermittent preventative therapy for malaria in pregnancy (IPTp3+)**[37] (% women receiving 3+ doses of IPTp during ANC during last pregnancy)	N/A	N/A	**31.0%**	(MIS 2016)	N/A
7a	**Use of insecticide treated nets (ITNs)** (% population who slept under an ITN the previous night)	39.0% 41.8%	(MIS 2013) (DHS 2013)	**38.6%**	(MIS 2016)	↓
7b	**Use of insecticide treated nets (ITNs) by children under 5** (% children under 5 who slept under an ITN the previous night)	45.0% 49.0%	(MIS 2013) (DHS 2013)	**44.1%**	(MIS 2016)	↓
7c	**Use of insecticide treated nets (ITNs) by pregnant women** (% pregnant women who slept under an ITN the previous night)	47.1% 52.6%	(MIS 2013) (DHS 2013)	**44.0%**	(MIS 2016)	↓
8	**Indoor residual spraying (IRS) coverage** (% population at risk protected by IRS during a specified time-period)	N/A	N/A	**4.8%** **5.8%**	(DHS 2013) (MIS 2013)	N/A
9	Malaria mortality rate					

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	**Household ownership of insecticide treated nets (ITNs)** (% of households with at least one ITN)	61.6% 64.4%	(MIS 2013) (DHS 2013)	**60.3%**	(MIS 2016)	↔
2	**Treatment-seeking behaviour for children with fever** (% children <5 with fever in the last 2 weeks for whom advice was sought)	62.5% 71.7%	(MIS 2013) (DHS 2013)	**71.4%**	(MIS 2016)	↔
3	**Malaria diagnostic testing rate in children** (% of suspected malaria cases in children <5 that had a diagnostic test)	1.3%[38] 39.6%	(MIS 2013) (DHS 2013)	**51.1%**	(MIS 2016)	↑
4	**Appropriate treatment among children treated for malaria** (% children <5 with fever in the last 2 weeks receiving any antimalarial who received first-line antimalarial treatment)	83.9% 77.1%	(MIS 2013) (DHS 2013)	**96.5%**	(MIS 2016)	↑
5	**Coverage of ITNs / LLIN distribution**[39] (% estimated <5 and pregnant women population receiving ITNs / LLINs)	31.6%	(NMCP 2015)	**35.0%**	(NMCP 2016)	↑
6	**No reported stock-outs of rapid diagnostic tests (RDTs)** (% health facilities reporting no stock out every month of the year)	*	*	*	*	*
7	**No reported stock-outs of artemisinin combination therapy (ACT)** (% health facilities reporting no stock out every month of the year)	*	*	*	*	*

[34] The figure from the week 52 epidemiological report was 229.4/1,000 persons in 2016. This is different to the NMCP provided figure of 348/1,000 persons in 2016, 288/1,000 persons in 2015, and 346/1,000 persons in 2014. This HSPR was completed remotely from the UK, and so it was not possible to triangulate these figures, and therefore the published value of 229.4 only was used.

[35] Source: numerator: number of people with confirmed malaria treated in PHUs and the community from Malaria Programme (MP) data; denominator: number of people tested with confirmed malaria in PHUs and the community from Malaria Programme (MP) data. NB: Those tested and treated in hospitals are not included because hospital data was only supplied for July - December 2016, and not for January - June 2016. The relative numbers of people tested and treated in hospitals is small - e.g. from July - December over 2 million patients were confirmed and treated in PHUs and the community, but only 33,181 were confirmed and treated in hospitals. Therefore, whilst in future years efforts should be made to include hospital data, for 2015-2016 the missing data are unlikely to have made a substantial impact on the overall estimate.

[36] Source: numerator: Total number of IPTp 2nd dose distributed at Health Facility and Community Level from Malaria Programme data 2016; denominator: estimated number of pregnant women from 4.4% of the total estimated population for that year using / modelling from the census 2015 final results using a CAGR approach

[37] Programme data for this indicator was supplied for July - December 2016 but not for January - June 2016. Therefore, in future years monitoring of this indicator from programme data should be included.

[38] NB: checked and confirmed - no reason for the discrepancy between DHS 2013 and MIS 2013 was found. The data-point from MICS 2010 was 25.5%, so the MIS 2013 estimate suggests an error.

[39] Source: numerator: number of ITNs distributed to U5s and pregnant women from Malaria Programme data; denominator: estimated number of pregnant women from 4.4% of the total estimated population for that year using / modelled from the census 2015 final results + estimated number of children <5 for that year using / modelling from the census 2015 final results using a CAGR approach

Data visualisations

Figure 37: Care-seeking for fever in <5s (left) and diagnostic testing rate for malaria in <5s (right), 2013-2016

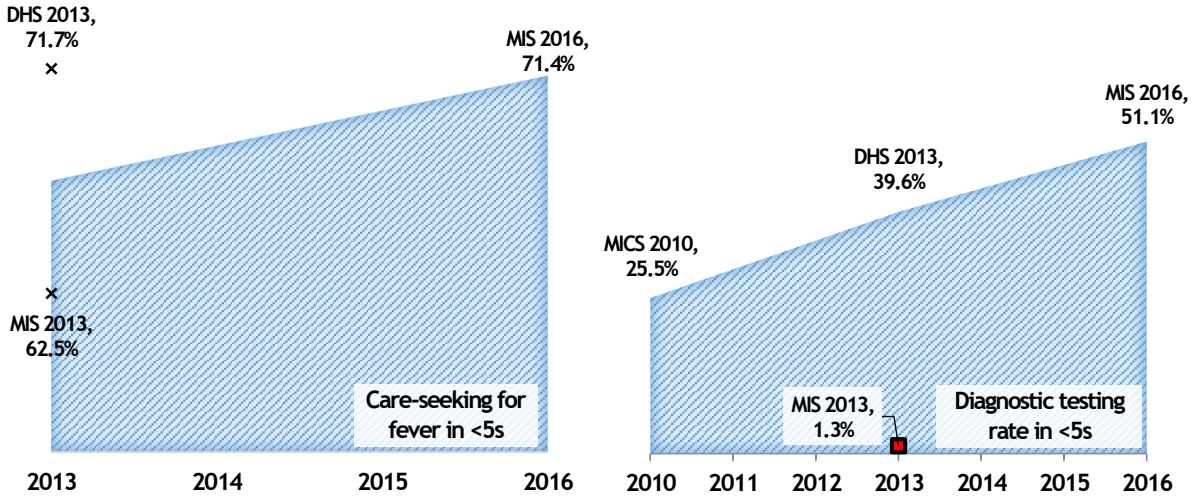


Figure 38: Appropriate treatment of malaria in <5s (left) and coverage of IPTP 2+ in pregnant women (right), 2008 - 2016

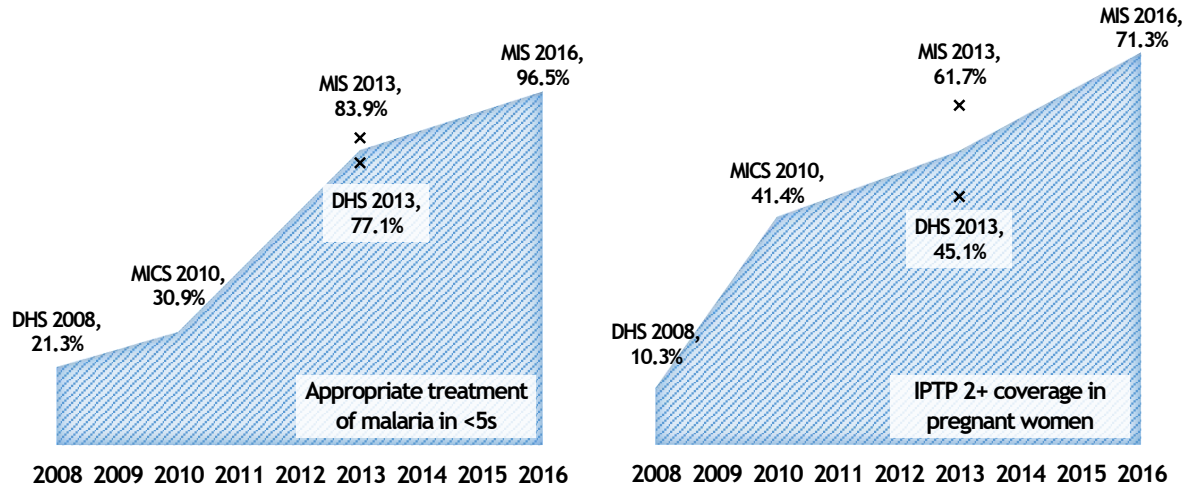
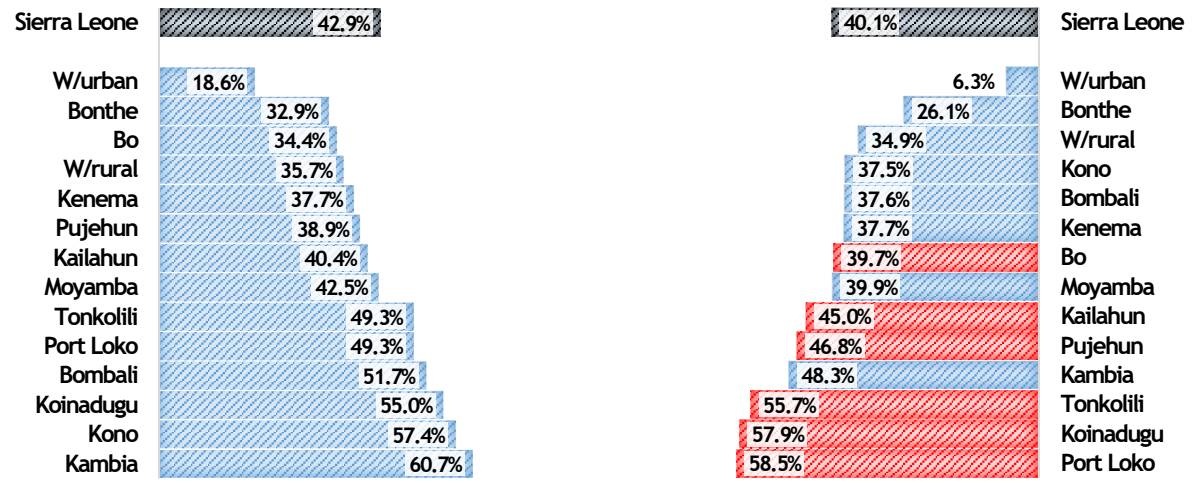


Figure 39: Prevalence of malaria in <5s using microscopy, by district, 2013 (left) and 2016 (right)[40]



[40] NB: Prevalence using RDT actually increased from 46.2% to 52.7% . Red bars for 2016 indicate worsening performance for that district between 2013 and 2016 by >1%

Figure 40: Overall ITN ownership and use, 2008 - 2016

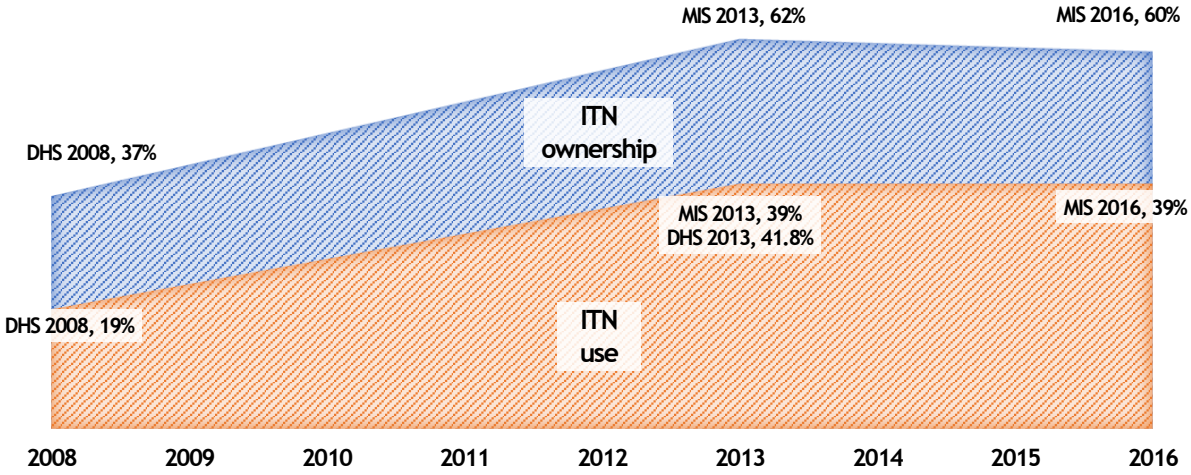


Figure 41: ITN use in children <5 (left) and pregnant women (right)

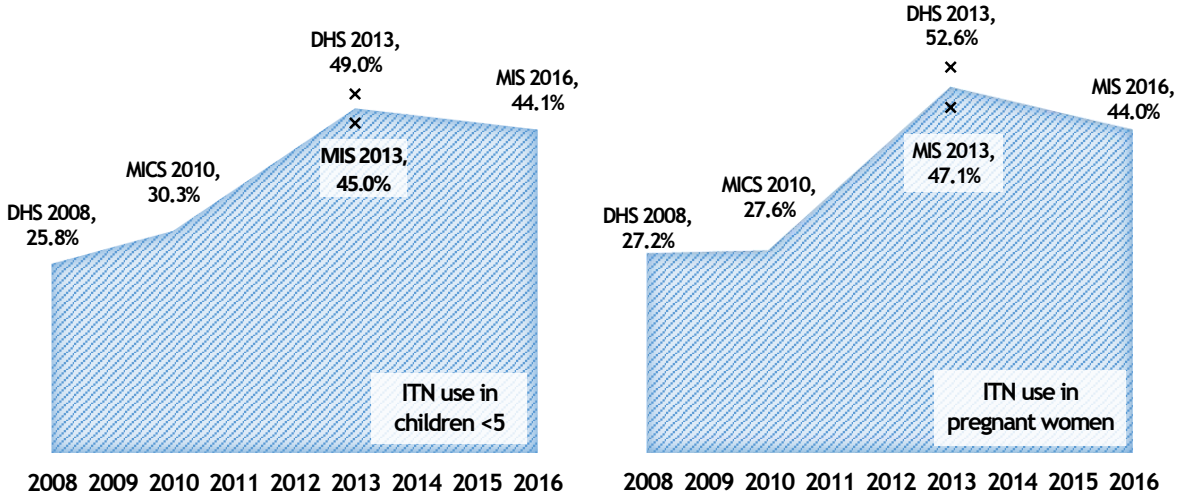
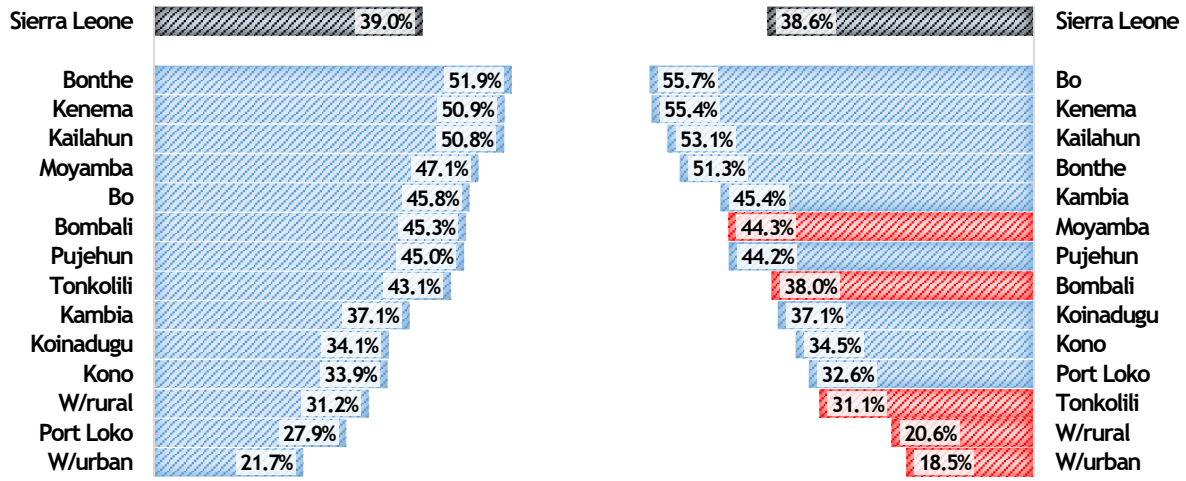


Figure 42: Population use of ITNs by district, 2013 (left), and 2016 (right)



Summary of performance across indicators

In addition to the collection of routine NMCP data, the latest Malaria Indicator Survey (MIS 2016) was conducted in 2016 allowing a comparison with MIS 2013 data to show the trend across key indicators.

In relation to the two headline indicators of malaria incidence rate and prevalence in under 5s, the incidence reported in the 2016 IDSR epidemiological report was 229 cases per 1,000 population, and the parasite prevalence under 5s using microscopy had decreased from 42.9% in 2013 to 40.1% in 2016.[41] These data indicate that the programme is performing well across the board. However, drilling down to the district level, it is clear that performance is uneven across the country, with some strong performers in terms of lowering malaria prevalence such as Western Urban, Kono, and Bombali; as well as some districts where performance has worsened between 2013 and 2016.

In terms of care-seeking for fever, diagnostic testing for malaria, and appropriate treatment of malaria, the results all suggest an upward trend. Diagnostic testing has gradually improved from 25.5% in 2010 to 51.1% in 2016 – so there is clearly more room for improvement. In contrast, adherence to treatment protocols for malaria are now at impressively high levels. There are two indicators that measure adherence to treatment protocols. The first, 'appropriate treatment among children treated for malaria', is measured by surveys and looks at the percentage of all children receiving antimalarials who received ACTs – this has shown a marked increase from 21.3% in 2008 to 96.5% in 2016. The second, 'treatment of confirmed malaria cases', is measured by NMCP data and looks at the % of all children with malaria confirmed by diagnostic testing who received ACTs – this likewise sits at 95.3% for 2016, though falling slightly from 97.3% in 2015. The focus going forwards will be on sustaining this performance and reaching for 100%.

In terms of intermittent preventative therapy for malaria in pregnancy (IPTp), the coverage of pregnant women receiving 2+ doses of SP/Fansidar during ANC has shown a steady improvement from 10.3% in 2008 to 71.3% in 2016 according to survey data, and from 73.6% in 2015 to 80.5% in 2016 according to NMCP data. However, data for the key indicator of 3+ doses of SP/Fansidar during ANC is much lower at 31% in 2016, and NMCP data for this indicator has started to be collected to allow closer monitoring in future years.

With regard to ITN coverage and use, the news is more disappointing. Following years of improvement between 2008 and 2013, use among children under 5, pregnant women, and the whole population appear to have fallen or stagnated between 2013 and 2016. Again, performance across districts is variable, with districts such as Bo and Kenema showing a strong improvement in population ITN use, and Western Urban and Western Rural showing disappointing falls.

[41] NB: Prevalence using RDT actually increased from 46.2 to 57.1%

Key activities relating to malaria in 2016

This section will provide an outline of the key activities related to malaria in 2016. A more comprehensive description including micro-level targets is available in the NMCP Annual Report.

Sierra Leone Malaria Strategic Plan (MSP) 2016-2020

Following the expiry of the National Malaria Plan 2011-2015 and based on the recommendations of the malaria programme review 2013, the MSP 2016-2020 was developed and officially launched this year. It is based on the principles of universal coverage with proven malaria interventions; equity, equality, and non-discrimination; and participation and accountability to deliver the key elements of availability, accessibility, acceptability, adequacy, quality, and contiguous expansion of interventions.

Insecticide resistance monitoring and management plan (IRMMP) 2017-2020

In response to the emergence of insecticide resistance both across the world and in Sierra Leone, the IRMMP was developed to provide a framework for insecticide resistance monitoring and management; to strengthen the capacity of personnel involved; and to provide a forum and strategic framework for partners to ensure coordinated and harmonised implementation of vector elimination interventions. This plan is aligned with the MSP 2016-2020.

Monitoring of antimalarial treatment and efficacy study

Following the WHO recommendation to conduct an efficacy study to monitor the emergence of resistant strains of malaria, the study was conducted in four sentinel sites: George Brooke CHC, and Makeni, Bo, and Kenema district hospitals. The patient data collection was completed in 2016, and in 2017 the data will be analysed with the support of WHO Geneva, and the study results published.

Training on malaria case management

In order to improve the quality of care provided in hospitals where a large proportion of cases admitted are for severe / complicated malaria, NMCP conducted training for hospital staff across the public and private sector across Sierra Leone on the proper diagnosis and management of both uncomplicated and severe malaria.

Integration of malaria into DHIS-2

Prior to 2016, NMCP was using a customised instance of the national Health Management Information System (HMIS) – DHIS-2. In order to support harmonised reporting, data management, and planning, all malaria data elements and indicators have now been fully integrated into the national DHIS-2 system.

Piloting of Intermittent Preventative Treatment for Infants (IPTi)

Following recent WHO recommendations on how to further reduce the burden of malaria, NMCP set up a National IPTi Task Force to implement IPTi in pilot districts (Western Rural, Kambia, Pujehun, and Kenema) in 2017. IPTi will involve the administration of a full therapeutic course of sulfadoxine-pyrimethamine (SP) through the EPI programme. This will reduce the incidence of malaria in infants in their first year of life.

Conducting the Malaria Indicator Survey (MIS) 2016

The latest MIS was conducted between May and August 2016 with a broad range of partners. It covered a broad range of areas, many of which are highlighted in this chapter, and the full report is available online. Crucially, it includes district breakdowns of key indicators, and time-trend analysis to show whether performance is improving or worsening.

Advocacy and resource mobilisation drive for the 2017 LLIN campaign

Following the successful mass distribution of 3,523, 873 LLINs (100% of target) across Sierra Leone in 2014, the next 3-yearly distribution is planned for 2017. This will reach new households as well as replacing aged nets in existing households. In preparation for this key intervention, a resource mobilisation drive was successfully completed, with the Global Fund agreeing to fund 50% of the net costs and DFID agreeing to fund the other 50% of net costs and non-net costs through UNICEF.

Development of malaria business plan 2016-2018

In light of the funding challenges, both domestic and foreign, the malaria business plan was developed to engage stakeholders in Sierra Leone to establish effective partnerships in financing, as well as technical and operational support to enhance cost-effective malaria prevention and control interventions. The major targets for the business plan are: the local private sector, including mining, telecommunications, housing, banking, agriculture, and tourism; GoSL ministries, departments, and agencies; and development partners including UN bodies, bilateral donors, and NGOs.

Key challenges in 2016

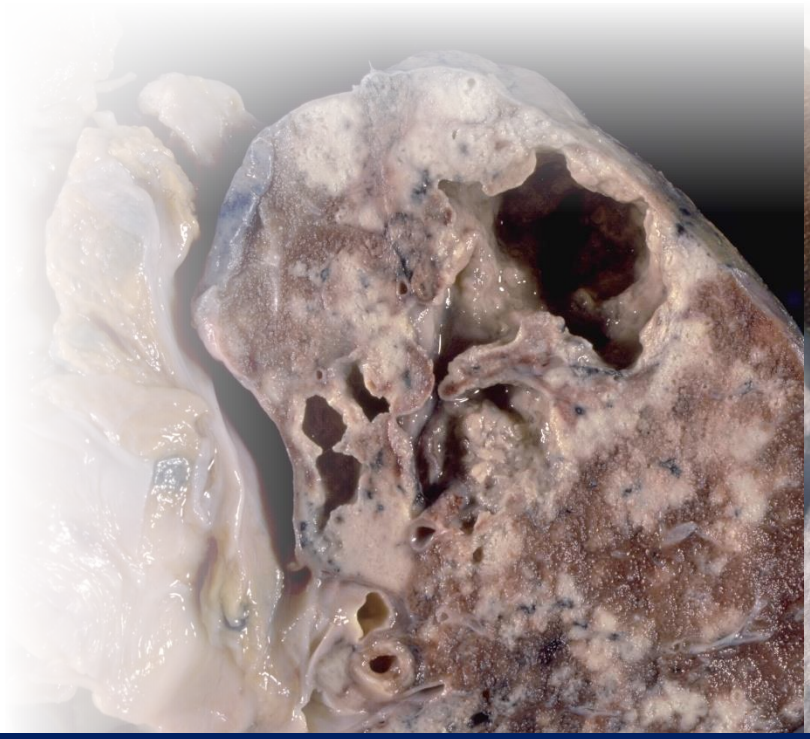
Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- Limited storage capacity within the supply chain at all levels – both in terms of the quantity of space available, and the quality of space available.
- Limited human resource capacity for effective programme implementation at the district level
- Weak and poorly coordinated implementation at both national and district levels
- Weak community engagement, particularly in light of the importance of this for effective prevention and vector control
- In line with the experience of most countries in the region, substantial gaps in programme coverage – with funding shortfalls and fragile health systems undermining overall progress and jeopardising the attainment of national targets.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, in 2017 NMCP looks forward to:

- Tackling malaria and working towards the target of a 40% reduction in new cases by 2020
- Continuing to work together with communities to promote the use of bednets by every family member, every night; to ask people to keep their environment clean to reduce breeding sites for mosquitos; and urging people to seek care at the very first signs of malaria.
- Conducing the IPTi pilot and look forwards to scaling this up nationally
- Delivering another successful national LLIN campaign, reaching millions of Sierra Leoneans with LLINs
- Delivering the activities under the new MSP 2016-2020; the IRMMP 2017-2020; and the malaria business plan 2016-2018.



Area 3: TB and leprosy

Introduction

Tuberculosis (TB) is one of the oldest and widespread diseases in the world, and a major cause of death and disability in Sierra Leone. The WHO Global TB Report 2016 highlighted that Sierra Leone ranks 9th in the world for the severity of disease burden based on incidence per capita. Furthermore, TB places its heaviest burden on the poorest in society, exacerbating existing inequalities. However, with timely diagnosis and correct treatment, most people who develop TB disease can be cured.

The key steps in achieving this are effective case-finding and early diagnosis with drug susceptibility testing and contact tracing; effective treatment with appropriate drug regimens, including for drug-resistant TB, and patient support; management of co-morbidities and HIV co-infection in particular; and vaccination and preventative treatment of those at high risk. These activities are undertaken by the National Leprosy and TB Control Programme (NLTCP) under the stewardship of the Directorate of Disease Prevention and Control (DDPC), working together with colleagues across the Ministry from the National AIDS Control Programme (NACP), Directorate of Food and Nutrition (DFN), Directorate of Reproductive and Child Health (DRCH), and others.

The NLTCP also tackles leprosy – another chronic infectious disease present in Sierra Leone that can cause progressive and permanent damage to the skin, nerves, limbs and eyes, with symptoms taking as long as 20 years after infection to occur. Like TB, leprosy is also curable with effective multi-drug therapy (MDT), and the NLTCP works towards finding all remaining cases of leprosy and providing them with effective treatment to eliminate leprosy from Sierra Leone once and for all.

This chapter will outline performance across key indicators related to TB and leprosy, highlight the major activities and challenges faced by NLTCP in 2016, and provide a brief look forwards to 2017.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
	TB-specific indicators[42]					
1	**TB mortality rate (excluding HIV +ve TB)** (no. of deaths attributable to TB in a given year / 100,000 pop.)	45 45	(WHO 2014) (WHO 2013)	**51**	(WHO 2015)	↑
2	**TB incidence rate (including HIV +ve TB)** (estimated new & relapse TB cases arising in a given year / 100,000 pop.)	310 313	(WHO 2014) (WHO 2013)	**307**	(WHO 2015)	↓
3	**TB notification rate** (new and relapse TB cases notified in a given year / 100,000 pop.)	170.7 185.3	(NLTCP 2015) (NTCLP 2014)	**192.7**	(NLTCP 2016)	↑
4	**TB prevalence rate** (no. of cases of TB in a population at a given point in time / 100,000 pop.)	445 472	(WHO 2013) (WHO 2010)	**441**	(WHO 2014)	↓
5	**TB case detection rate** (% estimated new and relapse TB cases detected and reported)	64% 62%	(WHO 2014) (WHO 2013)	**60%**	(WHO 2015)	↓
6	**TB treatment success rate** (% TB cases successfully treated among TB cases notified)	88.1% 87.0%	(NLTCP 2015) (NLTCP 2014)	**86.7%**	(NLTCP 2016)	↔
7	**Immunisation coverage rate for BCG** (% target population receiving BCG vaccine)	89%	(EPI 2015)	**91%**	(EPI 2016)	↑
8	TB patients with results for drug susceptibility testing	N/A	N/A	N/A	N/A	N/A
9	Second-line treatment coverage among MDR-TB cases	N/A	N/A	**N/A**	N/A	N/A
	TB-HIV/AIDS co-infection indicators					
10	**TB preventative therapy for HIV+ve people newly enrolled in HIV care** (% newly enrolled in HIV care who are started on treatment for latent TB)	*	*	**83.0%**	(NLTCP 2016)	
11	**HIV test results for registered new and relapse TB patients** (% new and relapse TB patients who had an HIV test result recorded)	95%	(NLTCP 2015)	**97.0%**	(NLTCP 2016)	↑
12	**HIV +ve new and relapse TB patients on ART during TB treatment** (% new and relapse TB+HIV patients receiving ART during TB treatment)	*	*	**79.5%**	(NLTCP 2016)	

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	**HIV co-infection prevalence in registered new and relapse TB patients** (% TB patients screened for HIV who test HIV +ve)	12%	(NLTCP 2015)	**14%**	(NLTCP 2016)	↑
2	**TB defaulter rate** (% registered for TB treatment who defaulted)	5.9% 5.1%	(NLTCP 2015) (NLTCP 2014)	**4.6%**	(NLTCP 2016)	↓
3	**Leprosy notification rate** (leprosy cases notified in a given year / 100,000 population)	1.88 2.11	(NLTCP 2015) (NLTCP 2014)	**1.82**	(NLTCP 2016)	↓
4	**Leprosy treatment success rate** (% leprosy cases successfully treated among leprosy cases notified)	18.0% 26.2%	(NLTCP 2015) (NLTCP 2014)	**81.2%**	(NLTCP 2016)	↑
5	Leprosy incidence rate	N/A	N/A	N/A	N/A	N/A
6	Leprosy prevalence rate	N/A	N/A	N/A	N/A	N/A
7	Leprosy case detection rate	N/A	N/A	N/A	N/A	N/A

[42] For the WHO modelled data for indicators 1, 2, 4, and 5 - the population figures used by the WHO are different to those used in this report as they were modelled prior to the publication of the 2015 census. The raw data required to re-model these data were not available and therefore the original WHO estimates have been used here. The true population is higher than the population used by WHO, and therefore the central estimates for all rates per 100,000 population should actually be lower. For the remainder of indicators, population projections were developed using a CAGR approach from the 2004 and 2015 Census results. WHO data available from: http://apps.who.int/iris/bitstream/10665/250441/1/9789241565394-eng.pdf?ua=1 for 2015; and http://gamapserver.who.int/gho/interactive_charts/tb/cases/tablet/atlas.html and http://data.worldbank.org/ for data from earlier years.

Data visualisations

Figure 43: TB mortality rate per 100,000 (left) and TB incidence rate per 100,000 (right) 2010-2015[43]

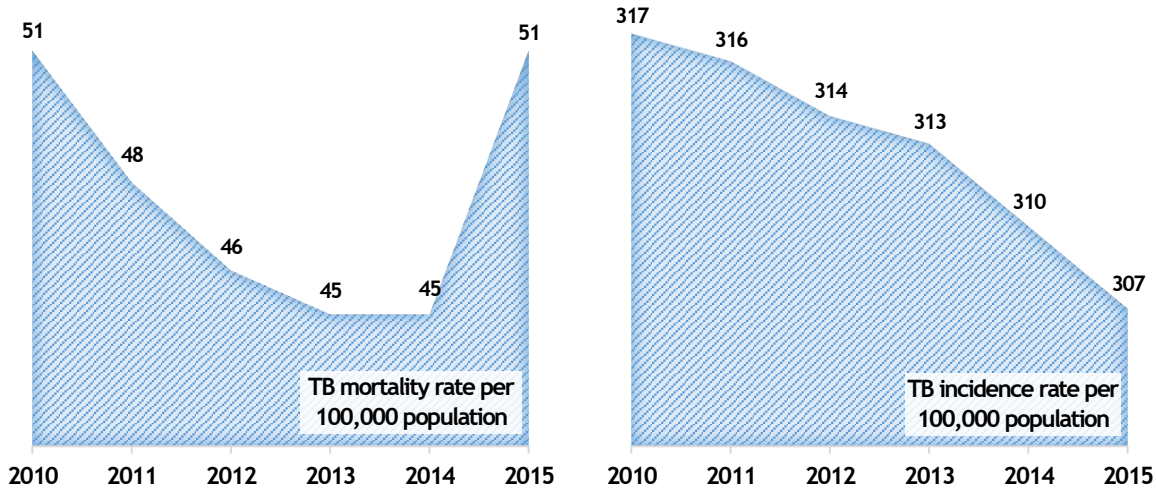


Figure 44: TB case notification rate per 100,000 population 2010-2016 (left) and case detection rate 2010-2015 (right)

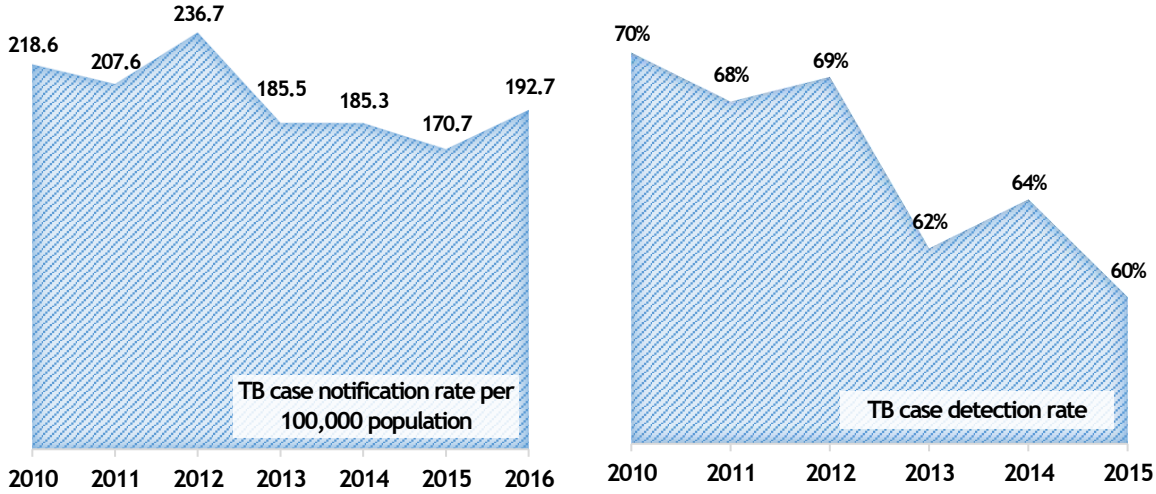
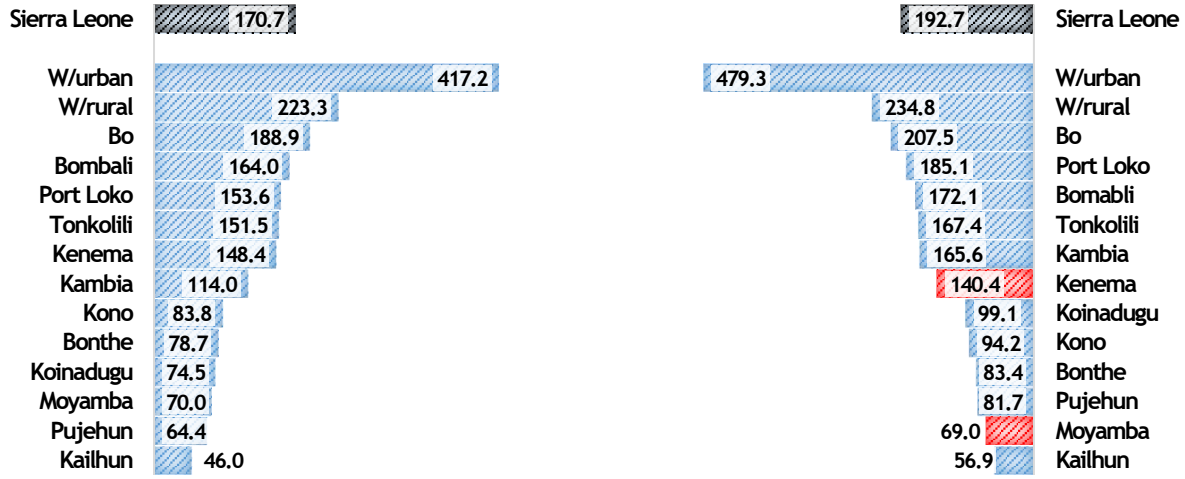


Figure 45: TB case notification rate per 100,000 population by district, 2015-2016[44]



[43] NB: different scales are used on the left and the right in line with the convention used in this report where the same scale is used only where there is additional value in comparing both charts in this way. For data sources, please see the previous footnote.

[44] NB: Red bars for 2016 indicate worsening performance for that district from 2015 to 2016

Figure 46: TB treatment success rate 2014-2016 (left) and defaulter rate 2010-2016 (right)

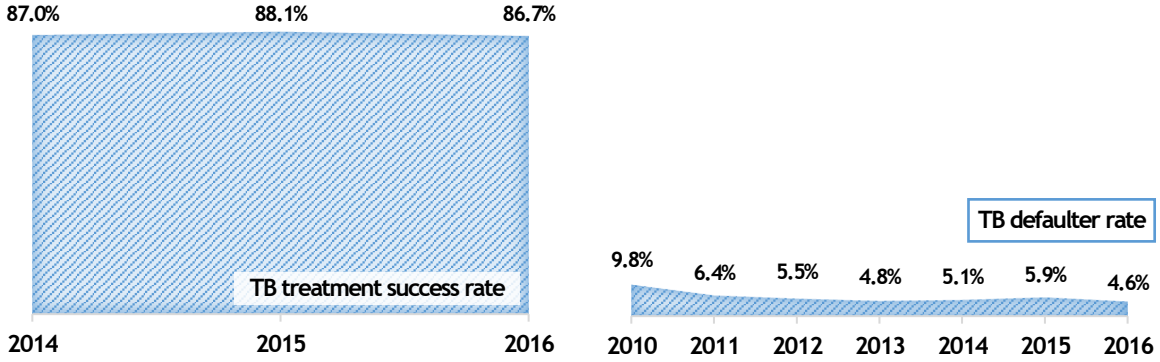


Figure 47: TB treatment success rate by district, 2015 (left), and 2016 (right)

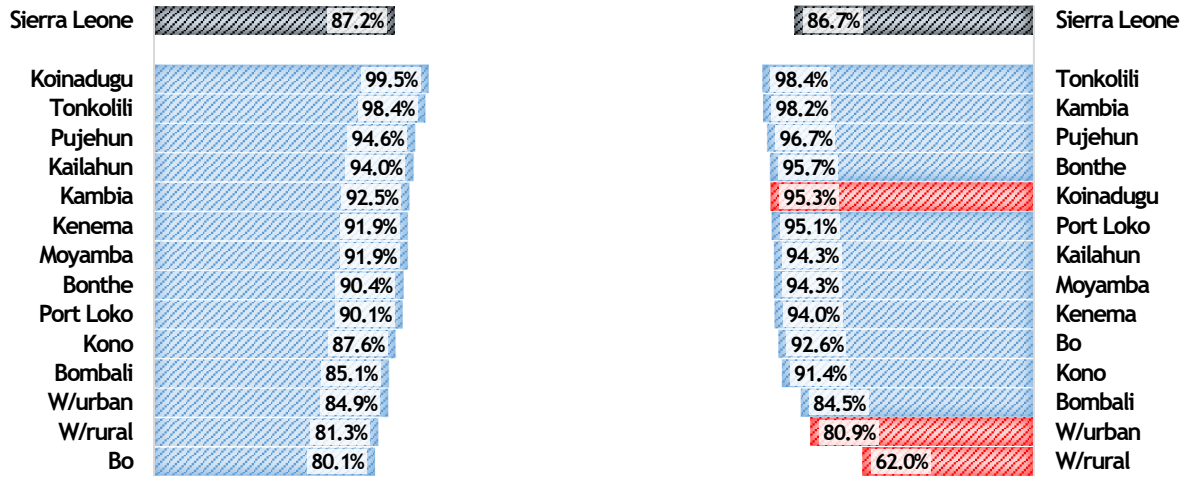


Figure 48: Leprosy case notification rate / 100,000 population 2010-2016 (left) and treatment success rate 2014-2016 (right)

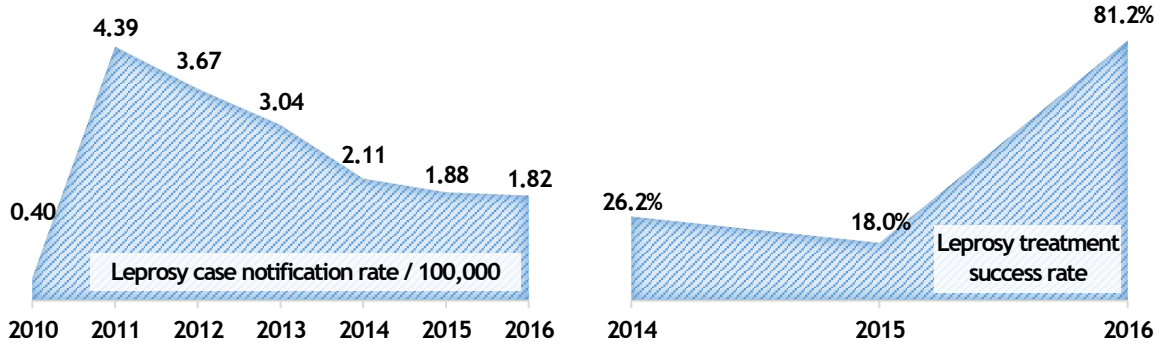
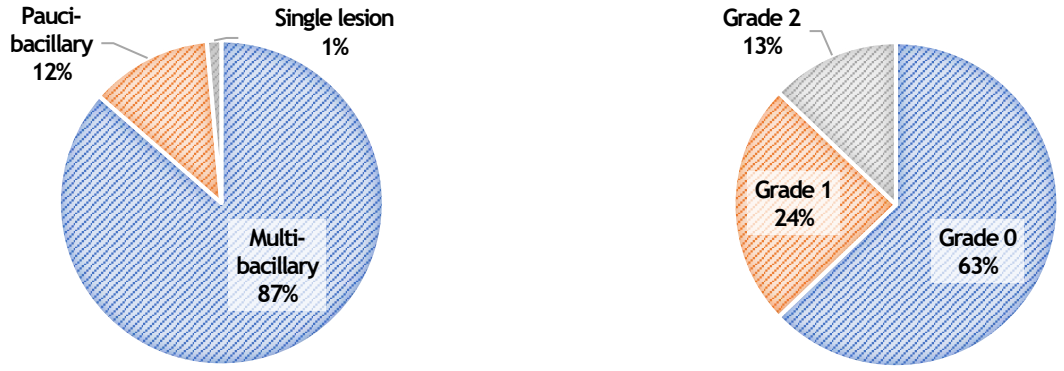


Figure 49: Leprosy cases by type (left) and disability grading (right), 2016



Summary of performance across indicators

In the absence of adequate national data on TB mortality, incidence, and prevalence, the most recent WHO estimates from 2015/2014 indicate that whilst prevalence and incidence are gradually falling, estimated deaths from TB rose again in to 51 deaths per 100,000 population in 2015 – the same level as in 2010.

NLTCP data show that the case notification rate rose again to 192.7 per 100,000 population following 3 consecutive years of falling, but remains below the 2012 peak of 236.7. Similarly, WHO estimates for the TB case detection rate have also been falling from 2012 to 2015 down to 60%, though the figure for 2016 has not yet been released. Drilling down to the district level shows that whilst almost all districts improved performance in case notification, Kenema and Moyamba saw their case notification rates fall. Together, these data indicate that whilst 2016 may have seen a fall in TB incidence and an uptick in programme performance in terms of notification, there is still much room for improvement to improve case detection and case notification in order to ultimately reduce mortality from TB in Sierra Leone.

NLTCP data show that the TB treatment success rate fell from 88.1% in 2015 to 86.7% in 2016, the lowest rate for 3 years. Again, most districts actually improved their treatment success rate from 2015 to 2016, with Western Area (and particularly Western Rural) showing a major fall in performance, and Koinadugu showing a fall in performance whilst continuing to do well. This year also saw the start of NLTCP collecting data on percentage of drug-resistant TB cases enrolled on appropriate treatment, though only 10% was achieved. The TB defaulter rate also fell to 4.6% in 2016 - its lowest level for 7 years.

HIV-TB co-infection prevalence increased from 12% in 2015 to 14% in 2016. 97% of TB patients were tested for HIV in 2016 up from 95% in 2015, though only 79.5% of those testing positive received ART during TB treatment. From the other side, 83% of HIV +ve patients were enrolled on TB preventative therapy in 2016.

The leprosy case notification rate continued to decline for its 5th consecutive year – and the NLTCP report indicates that this likely reflects that there are many more cases that were not identified (as opposed to wholly reflecting a falling prevalence of leprosy). Notably, 13% of cases were grade 2 disability indicating late diagnosis. More impressively, the leprosy treatment success rate soared from 18% in 2015 to 81.2% in 2016 – and the challenge in 2017 will be to ensure that this continues.

In summary, this was a mixed year for both TB and leprosy – with some cause for optimism after falling performance across key indicators in recent years, but plenty of room for improvement in 2017 and beyond.

Key activities relating to TB and leprosy in 2016

This section will provide an outline of the key activities related to TB and leprosy in 2016. A more comprehensive description including micro-level targets is available in the NLTCP annual report.

Human resource capacity building

There is an ongoing need to build capacity to deliver effective TB and leprosy services throughout the 170 service delivery points throughout Sierra Leone. To that end, the following activities took place in 2016:

- M&E officer attending national M&E training
- Pharmacist attending warehouse operational management training in South Africa
- Quantification of drugs and supplies training supported by MoHS and USAID
- Programme manager, pharmacist, and public health sister attending the TB Union conference
- Lab scientist, MDR focal point, and clinician nurse attending a drug-resistant TB study tour to Cameroon
- Supportive supervision and mentoring at the district level

HIV/TB collaboration

In line with the well-evidenced link between HIV/AIDS and TB, there was a major increase in focus on screening TB patients for HIV in 2016, though there is still room for improvement in the area of ensuring that HIV +ve patients are started on ARVs and HIV -ve patients are started on prophylaxis.

To facilitate the design of a 'one-stop shop' for this purpose, an joint NLTCP / NACP assessment was conducted to facilitate the design of an integrated service delivery system. This assessment was conducted across all DOT sites, and will inform the decision of whether the integration of services should be partial or complete.

Additionally, two joint TB-HIV/AIDS programmes were held to review progress on collaborative working, identify gaps and challenges, and to recommend solutions. The outcomes of the meetings included the decision to review and revise HIV data collection tools to include routine TB screening; to develop tools for assessment; to begin a dialogue around the integration of EID in GeneXpert; and to conduct joint supportive supervision in Kono, including interaction and dialogue with community health workers.

Nutrition/TB collaboration

Appropriate nutrition is a critical component of TB care, and so NLTCP collaborated with WFP to provide nutrition support to TB patients through 'Food by Prescription' (FBP). Pre-implementation training and development of tools was also conducted, including the development of integrated nutrition guidelines for TB/HIV to be rolled out in 2017.

Multi-drug resistant (MDR) TB

2016 saw the commencement of focused action against MDR-TB. Actions taken included: a scoping mission; development of the MDR-TB plan; establishment of GeneXpert in Freetown (including Lakka, Connaught, and Ola During Children's Hospital) including installation, development of tools, training of lab technicians, and clinician orientation; quantification of drugs using Quam TB; procurement of first- and second-line drugs; line-listing MDR-TB patients; and to continue culture and drug susceptibility testing in Germany during setup of national programme. The draft MDR guideline is planned for completion in early 2017.

Use of CHWs for TB/HIV

Over the years, most TB control efforts have been limited to health facilities. However, the challenges of constrained human resources and long distances from villages to health facilities have limited the access of TB patients to effective care. Accordingly, in 2016 NLTCP initiated the process of community involvement and engagement in the management of TB – particularly in improving case notification.

Accordingly, NLTCP developed TB guidelines, tools, and job aides for CHWs, helping to equip them with appropriate knowledge and skills for managing TB – particularly in the area of contact tracing which will make a significant contribution to improving the case detection rate.

Key challenges relating to tackling TB and leprosy in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- Despite improving case notification rates for TB, there are still many missing cases for both TB and leprosy
- There continue to be HR challenges, particularly in the areas of laboratories and the management of drug-resistant TB, and in clinical knowledge relating to the diagnosis and management of both TB and leprosy
- Information, education and communication (IEC) / behaviour change communication (BCC) interventions implemented at community level are weak relative to what is required
- There have been challenges in setting up an enabling environment for MDR-TB, including a place to work and unit for admission
- TB patients continue to face catastrophic costs, limiting their ability to successfully complete a full course of treatment

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed activities and actions for 2017 relating to tackling TB and leprosy include:

- Continuing the roll-out of GeneXpert for early diagnosis of MDR-TB, and decentralising to 3 regions
- Strengthening HIV/TB collaboration, including continuing work on the HIV/AIDS-TB 'one-stop shop' through completing the report and commencing implementation
- Accelerating the implementation of community-based TB case-finding and management through CHWs
- Supporting the roll-out of routine treatment guidelines for TB
- Commencing monitoring and treatment of patients with drug-resistant TB
- Supporting more effective case finding, diagnosis, and treatment of leprosy
- Strengthening coordination between partners engaged in tackling TB and leprosy in Sierra Leone
- Supporting the expansion of service delivery based on needs
- Supporting research on TB and leprosy

Area 4: HIV/AIDS

Introduction

The HIV/AIDS epidemic is a major health issue across sub-Saharan Africa – as well as a major social issue. The majority of new infections affect young adults, with young women and the poorest in society most vulnerable. Through progressive destruction of the immune system, the resulting immune deficiency leaves affected individuals susceptible to opportunistic infections and ultimately early death.

However, there are effective tools available to prevent this outcome: with early diagnosis and treatment with anti-retroviral therapy (ART), the progression from HIV infection to development of AIDS can be forestalled; with early HIV counselling and testing of pregnant women, those who are HIV positive can be started on ART and vertical transmission from mother to child can be prevented; and with effective use of male and female condoms, the risk of horizonal sexual transmission can be dramatically reduced.

The National AIDS Control Programme (NACP) applies these and other measures to both provide effective care for people living with HIV/AIDS and reduce the number of new infections. Sierra Leone is fortunate amongst sub-Saharan African countries in having a relatively low prevalence of HIV, however the experience of other countries has shown that if strong efforts are not made to find and treat everyone living with HIV, and to prevent all horizontal and vertical transmission, the public health consequences can be catastrophic.

Notably, the number one cause of death among people living with HIV in Africa is TB, and accordingly the NACP works closely with the National Leprosy and TB Control Programme (NLTCP) to prevent and manage TB infection among people living with HIV. Furthermore, as HIV/AIDS is a truly multisectoral issue, the NACP also works with a broad range of other partners to tackle the epidemic both across the wider Ministry of Health and Sanitation (MoHS), and across the whole Government of Sierra Leone (GoSL).

This chapter will outline performance across key indicators related to HIV/AIDS, highlight the major activities and challenges faced by NACP in 2016, and provide a brief look forwards to 2017.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
	HIV/AIDS-specific indicators[45]					
1	**AIDS-related mortality rate** (estimated number of people dying due to AIDS-related causes in a year per 100,000 population)	37.9 37.6	(UNAIDS 14) (UNAIDS 13)	**35.3**	(UNAIDS 15)	↓
2	**HIV incidence rate among adults aged 15-49** (% new HIV infections per 1,000 uninfected adult population)	0.07 0.07	(UNAIDS 14) (UNAIDS 13)	**0.07**	(UNAIDS 15)	↔
3	**HIV prevalence rate among adults aged 15-49** (% adults aged 15-49 living with HIV)	1.4% 1.5% 1.5%	(UNAIDS 14) (UNAIDS 13) (DHS 2013)	**1.3%**	(UNAIDS 15)	↓
4	**Prevention of mother-to-child transmission (PMTCT)** (% HIV+ve pregnant women provided with ART for PMTCT)	64% 64%	(UNAIDS 14) (UNAIDS 13)	**83%**	(UNAIDS 15)	↑
5	**Anti-retroviral therapy (ART) coverage** (% people living with HIV currently receiving ART treatment)	22% 18%	(UNAIDS 14) (UNAIDS 13)	**32.5%** **29%**	(NACP 2016) (UNAIDS 15)	↑
6	**Condom use at last sex with high-risk partner** (% using condom during last sexual intercourse with high-risk partner)	9.6% (F) 22.4% (M)	(DHS 2008)	**6.8% (F)** **17.7% (M)**	(DHS 2013)	↓
7	HIV care coverage					
8	People living with HIV who have been diagnosed					
9	HIV viral load suppression					
10	ART retention rate					
	TB-HIV/AIDS co-infection indicators					
11	**TB preventative therapy for HIV+ve newly enrolled in HIV care** (% newly enrolled in HIV care started on treatment for latent TB)	*	*	**83.0%**	(NLTCP 2016)	*
12	**HIV test results for registered new and relapse TB patients** (% new and relapse TB patients who had an HIV test result recorded)	95%	(NLTCP 2015)	**97.0%**	(NLTCP 2016)	↑
13	**HIV +ve new and relapse TB patients on ART during TB treatment** (% new and relapse TB+HIV patients on ART during TB treatment)	*	*	**79.5%**	(NLTCP 2016)	*

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1a	**HIV testing coverage amongst pregnant women**[46] (% of estimated pregnant women receiving HCT)	65.8%	(NACP 2015)	**61.1% - 62.5%**[47]	(NACP 2016)	↓
1b	**HIV testing coverage amongst the non-pregnant adult population**[48] (% of non-pregnant adult population receiving HCT)	4.7%	(NACP 2015)	**9.0%**	(NACP 2016)	↑
2a	**HIV prevalence amongst pregnant women receiving HCT** (% HIV +ve amongst pregnant women receiving HCT)	1.2%	(NACP 2015)	**1.6%**	(NACP 2016)	↑
2b	**HIV prevalence amongst general adult population receiving HCT** (% HIV +ve amongst non-pregnant adult population rcv HCT)	3.0%	(NACP 2015)	**3.2%**	(NACP 2016)	↔

[45] Source: all 'UNAIDS' sources available from: http://aidsinfo.unaids.org/
[46] Source: numerator: number of pregnant women receiving HCT from NACP Annual Report 2016; denominator: estimated total pregnant population from 4.4% of estimated population projection from 2015 Census, modelled as appropriate. NB: NACP set a target of 217,000 pregnant women for 2016, and on this metric they achieved 90.7% coverage.
[47] NB: the NACP annual report lists two different figures for number tested: 196,872 in the main text, and 201,500 in the annex with district breakdowns, hence the range.
[48] Source: numerator: number of non-pregnant adults aged 15+ receiving HCT from NACP Annual Report 2016; denominator: estimated total adult (aged 15+) population projection from 2015 Census, modelled as appropriate, subtracting the estimated pregnant population. NB: NACP set a target of approximately 665,000 men and non-pregnant women for 2016, and on this metric they achieved 54.6% coverage.

Data visualisations

Figure 50: AIDS-related mortality rate per 100,000 population (left), HIV incidence % per 1,000 uninfected population (middle), and HIV prevalence (right), 2010 - 2015[49]

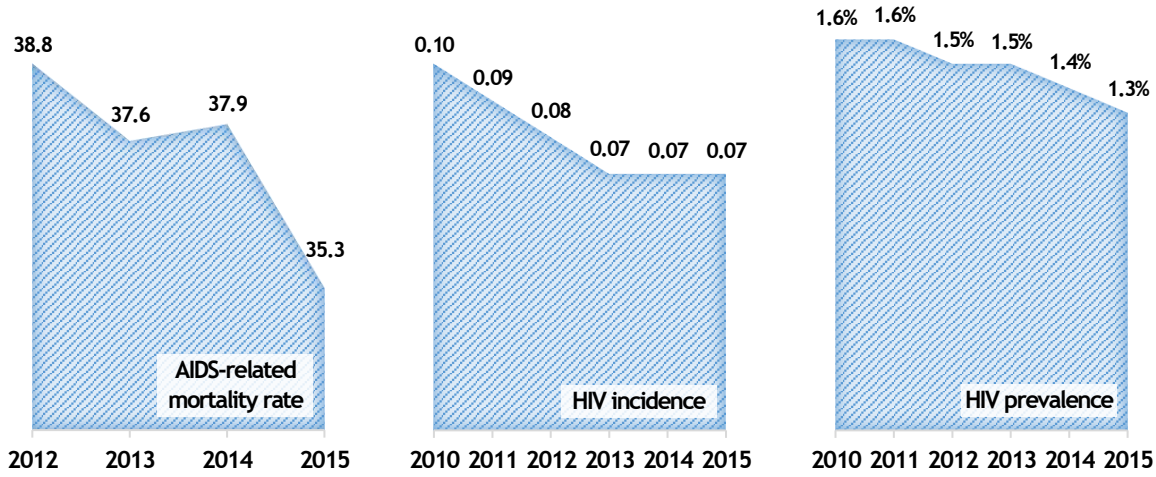


Figure 51: PMTCT coverage (left) and ART coverage (right) 2010 - 2015[5]

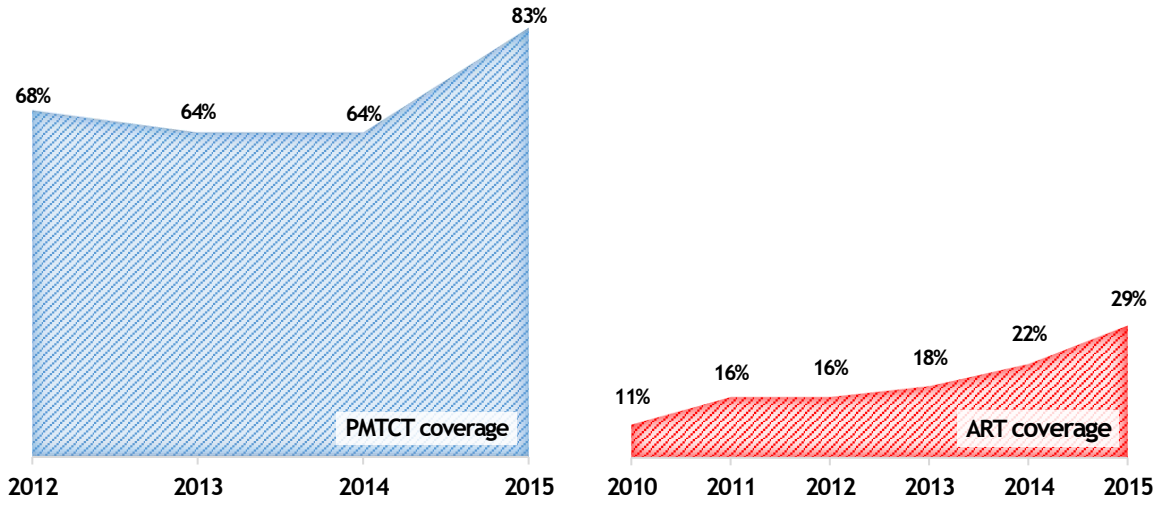
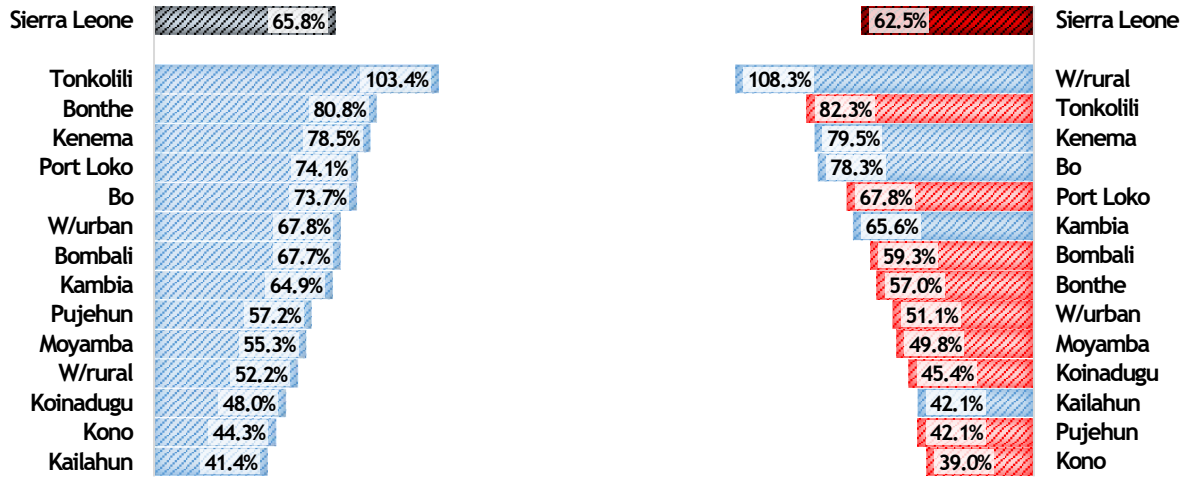


Figure 52: Percentage estimated pregnant population reached with PMTCT services by district, 2015 (left), and 2016 (right)[50]



[49] Source: UNAIDS 'AIDSinfo' database, available at http://aidsinfo.unaids.org/
[50] Source: NACP programme data. Red bars for 2016 indicate worsening performance between 2015 and 2016.

Figure 53: Prevalence of HIV in women tested for PMTCT by district, 2015 (left) and 2016 (right)

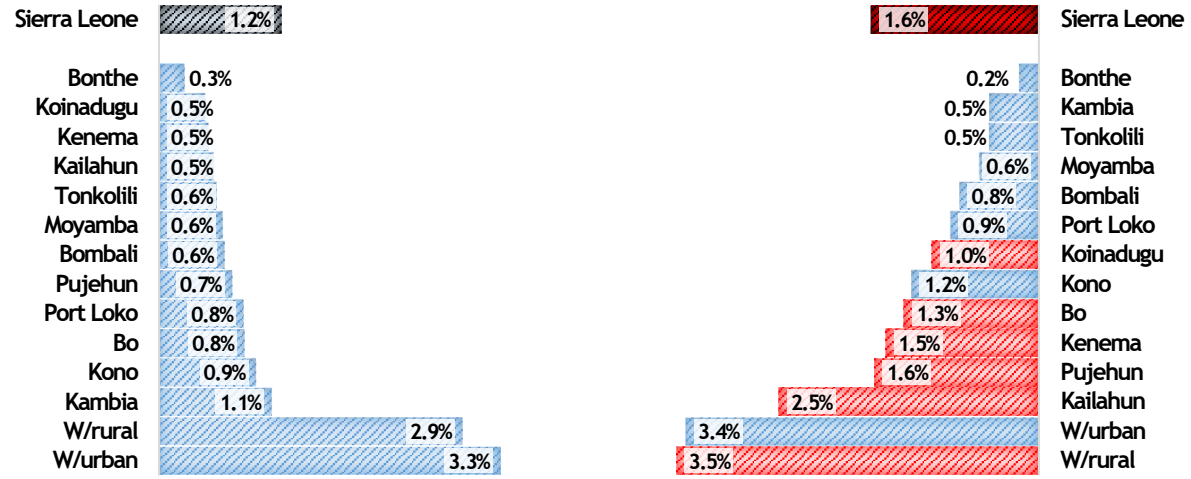


Figure 54: % estimated adult population reached with HCT services by district, 2015 (left) and 2016 (right)

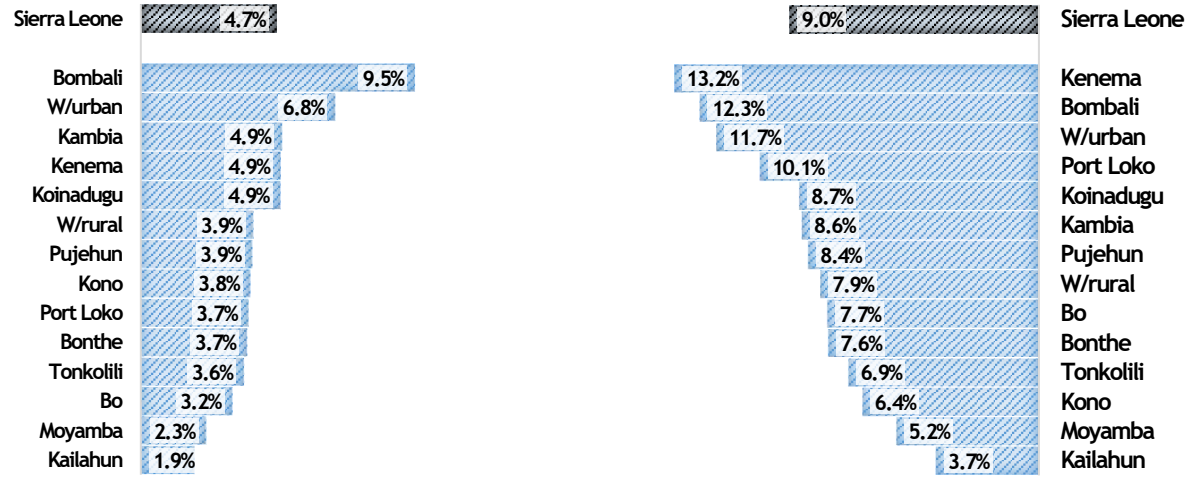
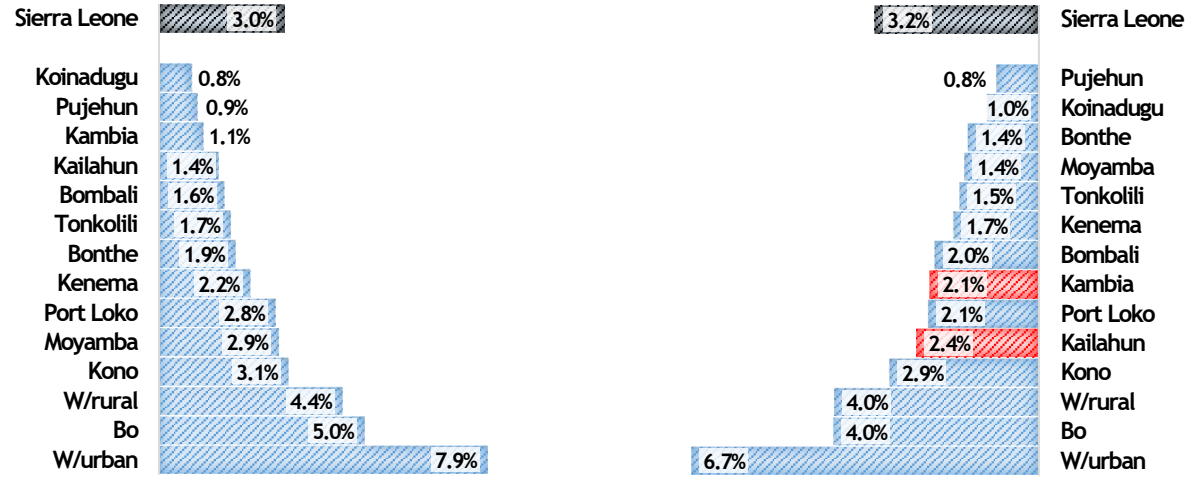


Figure 55: Prevalence of HIV in adults receiving HCT services by district, 2015 (left) and 2016 (right)



Summary of performance across indicators

The primary source for data on the core indicators for HIV/AIDS is the UNAIDS 'AIDSinfo' database, which is released on a yearly basis following submissions from NACP. The results for 2016 were not available at the time this report was published so the primary analysis is on the data to 2015. Programme coverage indicators are analysed from 2016.

The data for 2015 show ongoing improvement across the top-line impact and outcome indicators of AIDS-related mortality and HIV prevalence rate, with stabilisation of new cases at 0.07% of the uninfected adult population per year. It is important to note, however, that these figures are modelled and have considerable uncertainty. The modelled prevalence rate in adults over the age of 15 reported by UNAIDS for 2015 was 1.3%, but programme data shows that the prevalence amongst pregnant women tested for HIV in 2016 was 1.6%, and in all other adults over the age of 15 was even higher at 3.2%. Whilst these data sources are not directly comparable, they do suggest that the true prevalence of HIV in Sierra Leone may be higher than the UNAIDS estimate.

The two key indicators of 'anti-retroviral therapy (ART) coverage amongst people living with HIV' and 'ART coverage for the prevention of mother-to-child transmission (PMTCT) of HIV' both rose between 2014 and 2015. ART coverage rose from 22% to 29%; and PMTCT coverage rose from 64% to 83%. The reported figure for ART coverage for 2016 from the NACP Annual Report was 32.5%, higher than the 29% seen in 2015, but this would still represent a much lower coverage rate than what the programme should be aiming for. Moving forwards, increasing coverage of HCT must be a priority for the programme.

In 2016, broadly speaking the programme coverage of HIV counselling and testing (HCT) across the pregnant population was reasonable, with over 60% (196,872 women) of the estimated number of pregnant women receiving HCT – achieving over 90% of the programme target of 217,000 women. Amongst the rest of the adult population the coverage was less good, with 9% (362,963 men and non-pregnant women) of the non-pregnant adult population receiving HCT – achieving 54.6% of the programme target of approximately 665,000.

Drilling down to the district level, there was clearly a wide variation in both coverage of PMTCT and HCT services, and HIV prevalence in those tested. Overall, coverage of PMTCT services fell slightly overall, with disappointing falls seen in 9 districts. In contrast, coverage of HCT services to the general population rose or remained stable. HIV prevalence in pregnant women tested ranged from 0.2% (Bonthe) to 3.5% (Western Rural); and in the general population tested ranged from 0.8% (Pujehun) to 6.7% (Western Urban).

Performance on the joint TB/HIV indicators in 2016 was generally good, with 83% of those newly enrolled in HIV care receiving TB preventative therapy, and 97% of new TB patients tested for HIV up from 95% in 2015. However, only 79.5% of HIV positive TB patients received ART during their TB treatment, so there is room for improvement in this area too.

Key activities relating to HIV/AIDS in 2016

This section will provide an outline of the key activities related to HIV/AIDS in 2016. A more comprehensive description including micro-level targets is available in the NACP Annual Report.

Prevention of mother-to-child transmission (PMTCT)

Delivery of PMTCT services is a core objective for NACP, since providing HCT to pregnant women as early as possible during pregnancy enables them to access ART and prevent vertical transmission to their children. In 2016, 196,872 pregnant women were tested and 3,343 tested positive for HIV (of which the majority, 2,765, were positive for HIV-1, 84 for HIV-2, and 494 for HIV-1 and HIV-2). Of these women, 1,064 were already on ART and received follow-up treatment, and 2,504 were newly started on ART.[51]

Other activities conducted in 2016 to support PMTCT service provision include:

- Updating and validating the training module and accompanying manual. The printing and distribution will take place in 2017.
- Conducting integrated training on clinical mentorship for10 master trainers including 4 coordinators, 4 regional supervisors, and 2 M&E officers.
- Conducting 5-day training / re-training of 28 trainers (2 personnel from each of the 14 districts), followed up by cascaded training of HCWs on clinical mentoring.
- Conducting refresher training of HCWs in PMTCT, early infant diagnosis (EID), and paediatric HIV.
- Conducting sensitisation on male participation in PMTCT and other mother-child health issues for 50 community leaders in each of the149 chiefdoms.
- Organising monthly meetings on treatment outcomes for pregnant women and lactating mothers.

Provision of HCT

In order to both improve health outcomes for people living with HIV and reduce transmission of HIV, NACP ensures the provision of HCT to the general adult population. In 2016, 362,963 additional adults were tested (over and above the pregnant women described above), and 11,516 tested positive for HIV. Notably, uptake of HCT in the general population was much higher in the second half of the year. This is attributable in part to the joint World AIDS Day and HIV testing event at the end of the year.

Other activities conducted in 2016 to support HCT service provision included:

- Conducting 2-day training for 1,136 HIV counsellors from public and private facilities (at least 2 participants from each facility) on the provision of HCT services.
- Providing support (fuel, lunch, megaphones, and batteries) to 28 outreach teams of 3 personnel to conduct HCT in factories, markets, workplaces, health facilities not offering HIV services, and hard-to-reach communities. Through these outreach activities, NACP aims to scale-up HCT coverage to 1,030,0763 in 2017.
- Conducting training for 20 staff (2 from each of 10 private sector clinics) on the provision of HCT, PMTCT, ART, and reporting according to national guidelines.
- Conducting training for 691 CHWs and expert clients on adherence to counselling.
- Identifying and training peer educators for awareness raising in fishing communities.

[51] Source: NACP Annual Report 2016. NB: The total new starters + already on ART = 3,568 is greater than the number testing positive = 3,343. This discrepancy may be explained by pregnant women testing positive in 2015 being started on ART in 2016, though the data was not available to verify the discrepancy or calculate the proportion of those testing positive who were started on ART.

Provision of ART

One of the primary goals of NACP is clearly to ensure the provision of ART to people living with HIV. In 2016, 16,257 patients received ART (17,843 patients including defaulters expected to return to therapy).

Other activities conducted in 2016 to support ART service provision included:

- Conducting training of 691 HCWs (one from each of the existing PMTCT sites) in comprehensive HIV care using the new ART guidelines that were revised in 2015. This built the capacity of HCWs in the delivery of comprehensive HIV care including EID, ART, PMTCT, Option B+, and paediatric HIV.
- Updating and validating the OI guidelines.
- Laboratory monitoring of HIV positive patients

Programme monitoring and supervision

In 2016, the national programme management team comprising of 4 M&E officers and 4 programme coordinators conducted three supervisory visits to PMTCT, HCT and ART sites. Selected facilities were targeted in line with financial and time constraints. Mentoring and supportive supervision of field staff was also conducted throughout the year.

Other activities that took place during the year included:

- Updating of the data collection tools to capture TB screening data from ART and PMTCT sites and to add an IPT indicator.
- Provision of a laboratory fee subsidy for vulnerable HIV/AIDS patients.
- Strengthening PHUs and providing refresher training within fishing communities to provide HCT services.
- Providing operational costs to private facilities for relevant service delivery.
- Supporting coordination of meetings in chiefdom hubs.

TB/HIV collaboration

TB is one the commonest causes of morbidity and mortality among people living with HIV, including those on ART. Accordingly, intensified TB case-finding and access to quality diagnosis and treatment in accordance with international guidelines is essential for improving the quality of life for people living with HIV and their families – and is therefore a key activity for NACP.

In 2016, 12,169 people living with HIV were screened for TB. This included almost all those who tested positive in 2016 in addition to all those enrolled in ART. A total of 2,297 adults and children were also started on isoniazid prophylaxis therapy.[52]

[52] NB: insufficient data was provided to calculate proportion of all people living with HIV who have been tested for TB; proportion of those newly diagnosed with HIV who were tested for TB; or any indicators relating to treatment or prophylaxis coverage in this group. Accordingly, the 'core' indicators for this area use data provided by NLTCP.

Key challenges relating to tackling HIV/AIDS in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- Even though much progress was made in delivering preventative services for pregnant women and their newborn children, testing was interrupted due to a shortage of test kits. This shortage was also a major contributor to the low achievements in HCT coverage for the general population.
- Increasing uptake of HCT in certain communities was challenging due to bad terrain and geographical barriers in riverine and island communities, as well as in hilly and mountainous communities.
- Increase in the uptake of ARVs was limited due to the dwindling support for defaulter tracing.
- Whilst considerable efforts are being made to strengthen TB/HIV collaboration, the process is a gradual one and requires collaborative efforts by all partners.
- The IT infrastructure is in a state of poor repair in most districts.
- Collaboration between the National AIDS Secretariat (NAS), NACP regional and district personnel, and DHMTs for monitoring HIV performance is limited. This accounted for delays and errors in reporting.
- Late disbursement of funding to support programme activities had a major impact on management across the entire programme.
- Data collection tools were in short supply due to the expansion of sites not envisaged at the time of planning.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed actions for 2017 include:

- Working towards ensuring an uninterrupted supply of test kits and ARVs to all facilities, including improving the procurement process.
- Improving dialogue with DHMTs to further strengthen support NACP activities in the districts, including HCT, PMTCT, EID, and ART.
- Continuing and strengthening mentoring and supportive supervision by national and district staff, including in the area of improving data quality.
- Increase the number of data collection / reporting tools produced in order to cater for the larger number of facilities delivery NACP services.
- Fostering teamwork between NAS, NACP, and DHMT staff to improve data quality (timeliness, completeness, and accuracy) in order to support better planning and decision-making, including in the area of resource allocation.
- Work on all points in the system to avoid delays in the disbursement of funds to promote the smooth running of programme activities.

Area 5: Neglected Tropical Diseases (NTDs)

Introduction

Controlling neglected tropical diseases (NTDs) is a key objective of the Ministry of Health and Sanitation (MoHS) – particularly in relation to lymphatic filariasis (LF), onchocerciasis (river blindness), schistosomiasis (bilharzia), and soil-transmitted helminths. Focused and effective action in recent years has seen the prevalence of these diseases fall dramatically, with eradication achieved in specific districts. All that remains is the final push to finally rid Sierra Leone of this group of diseases and their negative health, economic, and social impacts.

These diseases can be effectively controlled through a combination of five public-health interventions: preventative chemotherapy through the large-scale delivery of medicines at regular intervals; intensified disease management; vector control and pesticide management; safe drinking water, basic sanitation and hygiene services, and health education; and zoonotic disease management through effective application of veterinary public health. Accordingly, the responsibility for reducing the burden of NTDs falls to more than just the Directorate of Disease Prevention and Control (DDPC) where the NTD programme sits: it also requires action from upstream areas such as environmental health and sanitation and health education and health promotion; as well as across the cross-cutting pillars discussed earlier.

This chapter will provide an overview of performance indicators related to NTDs and brief discussion of performance in relation to these data; then outline the activities carried out by the NTD programme in 2016; followed by a reflection on the challenges faced in implementing activities to reduce the burden of NTDs in Sierra Leone.

Activities of other directorates and cross-cutting areas related to reducing NTDs (e.g. Directorate of Environmental Health and Sanitation) are covered in their respective chapters.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
	Core NTD indicators					
1	**Coverage of preventative chemotherapy for selected NTDs** (% requiring preventative chemotherapy receiving it)					
1a	■ Onchocerciasis	78.3% 80.9%	(NTDP 2015) (NTDP 2013)	**78.5%**	(NTDP 2016)	↔
1b	■ Lymphatic filariasis (LF)	77.4% 80.6%	(NTDP 2015) (NTDP 2013)	**78.3%**	(NTDP 2016)	↔
1c	■ Schistosomiasis	79.4% 80.9%	(NTDP 2015) (NTDP 2013)	**83.1%**	(NTDP 2016)	↑
1d	■ Soil-transmitted helminths (STH)	77.4% 80.6%	(NTDP 2015) (NTDP 2013)	**78.3%**	(NTDP 2016)	↔
	NTD-related WASH areas					
2	**Population using safely managed drinking-water services** (% of whole population using safely-managed drinking water services)	65.5% 59.5% 57.3%	(NNS 2014) (DHS 2013) (MIS 2013)	**69.5%**	(MIS 2016)	↑
3	**Population using safely managed sanitation services** (% of whole population using safely-managed sanitation services)	9.8% 10.6% 12.1%	(NNS 2014) (DHS 2013) (MIS 2013)	**16.8%**	(MIS 2016)	↑

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	**Prevalence of lymphatic filariasis (LF)** (% of whole population with LF at a specific point in time)	0.3% 2.4%	Impact 2011 Baseline 2007	**0.5%**	Pre-TAS 2013	↓
2	**Prevalence of schistosomiasis** (% of whole population with schistosomiasis at a specific point in time)	45.1%	Baseline 2009	**15.2%**	Impact 2012	↓
3	Prevalence of onchocerciasis	N/A	N/A	N/A	N/A	
4	Prevalence of soil-transmitted helminths	N/A	N/A	N/A	N/A	

Data visualisations

Figure 56: Onchocerciasis chemotherapy coverage by district, 2015 (left), and 2016 (right)

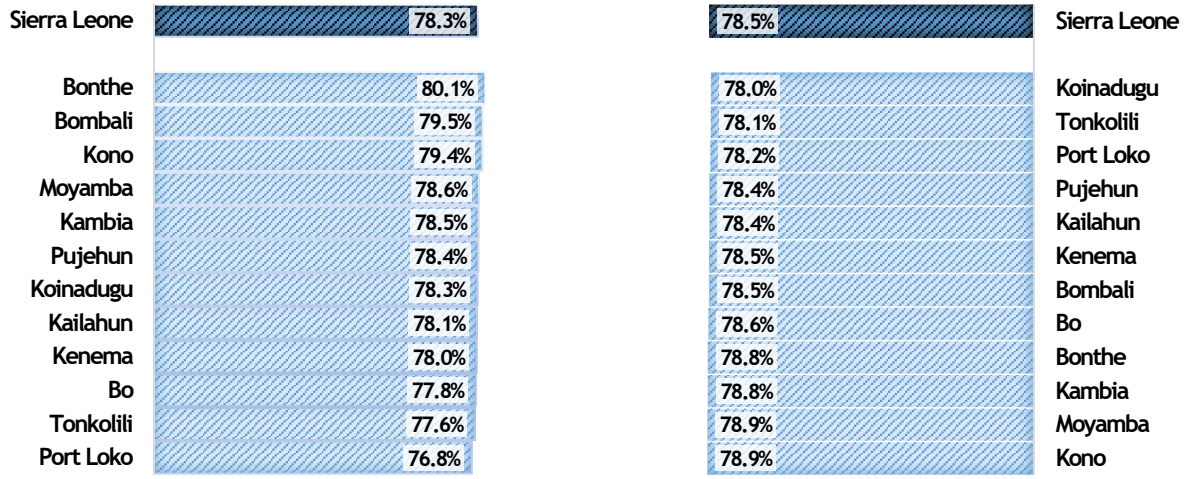


Figure 57: Lymphatic filariasis chemotherapy coverage by district, 2015 (left), and 2016 (right)

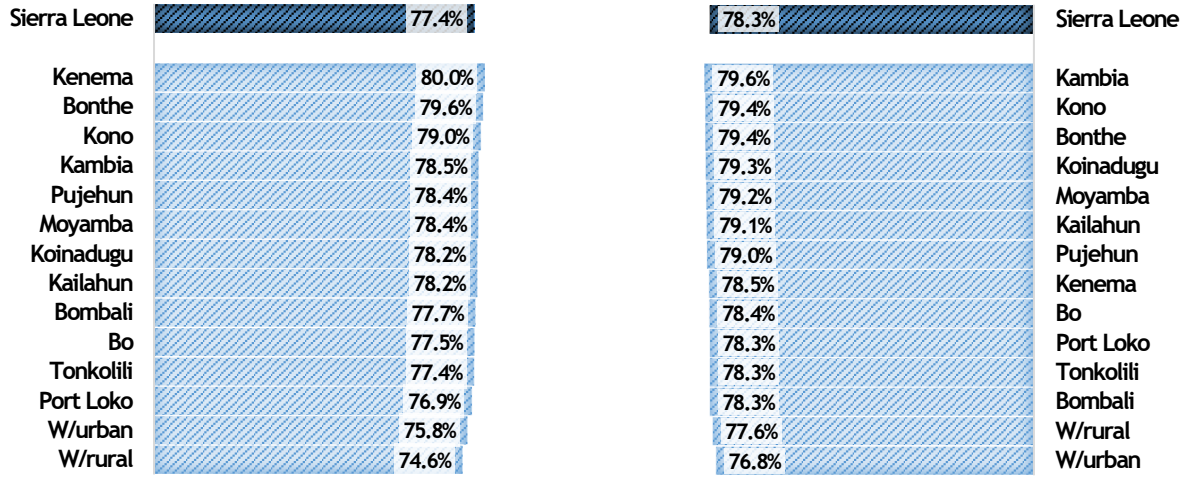
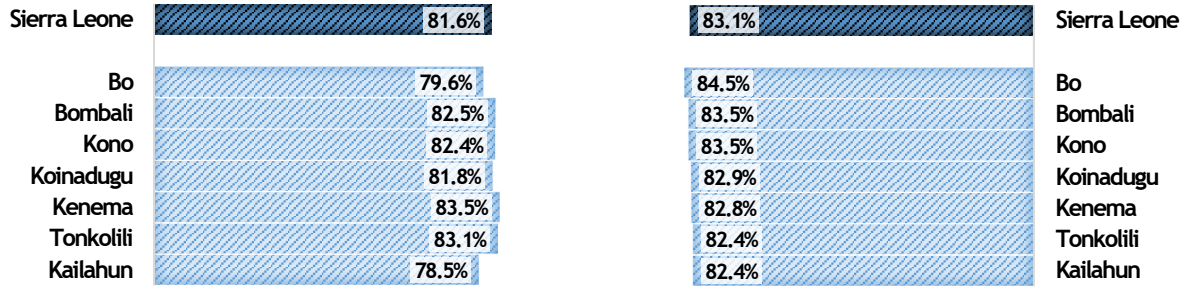


Figure 58: Schistosomiasis chemotherapy coverage by district (prior to MDA), 2015 (left), and 2016 (right)



Summary of performance across indicators

The coverage of preventative chemotherapy for the four key NTDs have remained remarkably constant from 2015 to 2016, with very little district variation – in contrast to the patterns seen in most other programme areas. Coverage edged up slightly across all four areas, with schistosomiasis coverage in particular showing a good improvement with all districts now at over 80% coverage.

It has been some time since the prevalence of the key NTDs was assessed in Sierra Leone, and it may be appropriate to conduct a survey-based assessment in the coming years. As coverage of key WASH indicators continues to improve and following years of good preventative chemotherapy coverage, the prevalence of NTDs in Sierra Leone may well be much lower than when last assessed.

Key activities relating to NTDs in 2016

This section will provide an outline of the key activities related to NTDs in 2016. A more comprehensive description including micro-level targets is available in the NTD Programme Annual Report.

Programme review and planning

The NTD annual review meeting was held in January 2016, bringing together MoHS staff from central and the districts, as well as key development partners. The achievements and challenges of 2015 were reviewed, and an outline for 2016 was developed.

Following this, a multi-stakeholder planning meeting was held in February 2016 with both MoHS and development partners in attendance. This allowed joint planning of the activities for the year, as well as the identification of gaps and challenges coming up and approaches to mitigating them. This provided a strong platform for conducting activities for the year ahead.

Throughout the year, several other key meetings took place. These included 2 partner coordination meetings and a regional meeting for Mano River Union (MRU) countries in Monrovia.

Programme delivery and integration

One of the main goals of NTDP is to reach all those in need with preventative chemotherapy for NTDs, in particular onchocerciasis, lymphatic filariasis, schistosomiasis, and soil-transmitted helminths. As noted in the previous section, good coverage was attained in 2016.

The NTDP has also integrated the co-administration of ivermectin and albendazole for the control of onchocerciasis, lymphatic filariasis, and soil-transmitted helminths. Collaboration with other programmes such as the National Eye Care Programme and the National School Health Programme were crucial in attaining good coverage.

Training

A broad range of training activities took place in 2016. Refresher training of trainers for 58 members of the NTDP and DHMTs was conducted, and these in turn would go on to train PHU staff. 1,300 PHU staff were trained across 12 districts on the management of NTDs and the concept of the 'community directed interventions' (CDI) approach to training community drug distributors (CDDs), as well as providing a supervisory role during mass drug administrations (MDAs) of ivermectin and albendazole.

30,000 CDDs were trained throughout 12 districts for MDAs of ivermectin and albendazole in June 2016, whilst for Western Area CHWs were trained to conduct MDAs through National Immunisation Days (NIDs) since the CDI approach was not considered a feasible option in this area.

Social mobilisation

The NTDP continued to sensitise communities in 2016, raising awareness of the benefit of mass drug administration and consequences of infection. They also highlighted what the community could do to improve WASH and reduce mosquito vector breeding sites.

Programme supervision

Monitoring and supervision of CDI activities are the responsibility of DHMT, PHU, programme management, and development partner staff. CDDs are volunteers, and therefore frequent visits are vital to ensuring quality programme implementation. During the MDA, independent monitors were used to monitor the process.

Key challenges relating to tackling NTDs in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- The vehicles used for programme coordination, supervision, and distribution of drugs and logistics are old and poorly maintained, making it difficult to conduct activities.
- One of the primary funders of the NTDP, the African Programme for Onchocerciasis Control (APOC), is closing down, and they were therefore unable to provide support for NTD programming.
- GoSL support remains limited.
- There are no funds available for the management of morbidity from lymphatic filariasis.

Area 6: Nutrition

Introduction

Malnutrition is responsible for around 45% of child deaths globally, and is a major cause of death and disability in Sierra Leone – particularly in children under 5 and pregnant women.

In addition to the deaths in children caused by acute malnutrition (wasting), chronic malnutrition (stunting) has long-term effects on individuals and societies including: diminished cognitive and physical development; reduced productive capacity and poor health; and an increased risk of degenerative diseases such as diabetes. Accordingly, it leads to significant educational and economic consequences at the individual, household, and community levels. Crucially, it is largely irreversible. Anaemia in women (including anaemia of dietary origin) is also a major contributor to maternal mortality in Sierra Leone being the highest in the world, and micronutrient deficiencies are a key contributor to morbidity and mortality across the life course.

Accordingly, the Directorate of Food and Nutrition (DFN) works assiduously towards a population whose nutritional status contributes to improved health, social, and economic well-being – especially in women, children, and other nutritionally vulnerable groups.

However, it is well understood that the causes of poor nutrition are complex and multifactorial beyond the immediate causes of nutrient intake and health status. Underlying causes include food security, quality, and diversity; care practices including breastfeeding; access to clean water, sanitation, and hygiene practices; and access to health services. Underlying or basic causes relate to institutions, political economy, and access to resources. Accordingly, the responsibility for improving nutrition outcomes goes way beyond DFN, or even MoHS – it is everybody's responsibility.

This chapter will provide an overview of performance across indicators related to nutrition outcomes and a brief discussion of these data; then outline the activities carried out by DFN in 2016; the challenges faced; and conclude with a brief look forwards to 2017.

Core indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1a	**Children under 5 years who are stunted** (% children <5 surveyed with height-for-age >2 SD below median)	38% 44.4% 34.1%	(DHS 2013) (MICS 2010) (NNS 2010)	**28.8%**	(NNS 2014)	↓
1b	**Children under 5 years who are severely stunted** (% children <5 surveyed with height-for-age >3 SD below median)	18.3% 24.4% 9.5%	(DHS 2013) (MICS 2010) (NNS 2010)	**7.8%**	(NNS 2014)	↓
2a	**Children under 5 years surveyed who are wasted** (% children <5 surveyed with weight-for-height >2 SD below median)	9.3% 8.5% 6.9%	(DHS 2013) (MICS 2010) (NNS 2010)	**4.7%**	(NNS 2014)	↓
2b	**Children under 5 years surveyed who are severely wasted** (% children <5 surveyed with weight-for-height >3 SD below median)	4.0% 3.2% 0.9%	(DHS 2013) (MICS 2010) (NNS 2010)	**1.0%**	(NNS 2014)	↓
2c	**Children under 5 years screened who are wasted** (% children <5 screened with weight-for-height >2 SD below median)	16.9% 16.5%	(DFN 2015) (DFN 2014)	**16.5%**	(DFN 2016)	↔
2d	**Children under 5 years screened who are severely wasted** (% children <5 screened with weight-for-height >3 SD below median)	3.5% 3.5%	(DFN 2015) (DFN 2014)	**3.4%**	(DFN 2016)	↔
3	**Children under 5 years who are overweight** (% children aged 0-59 months with weight-for-height >2 SD above md.)	7.5% 9.6%	(DHS 2013) (MICS 2010)	**2.2%**	(NNS 2014)	↓
4a	**Overweight or obese in men aged 15-49** (% men with BMI ≥25 kg/m^3)	N/A	N/A	**8.2%**	(DHS 2013)	N/A
4b	**Overweight or obese in non-pregnant women of reproductive age** (% non-pregnant women 15-49 with BMI ≥25 kg/m^2)	18.3% 17.9%	(DHS 2013) (NNS 2010)	**22.3%**	(NNS 2014)	↑
4c	**Overweight or obese in pregnant women** (% pregnant women 15-49 with BMI ≥25 kg/m^2)	N/A	N/A	**33.9%**	(NNS 2014)	N/A
5	**Incidence of low birth weight among newborns** (% of live births weighing less than 2,500g)	* 10%	* (MICS 2010)	**2-2.2%** **5%**	(DHIS2 2016)[53] (SLMS 2013)	↓
6	**IYCF 1: Early initiation of breastfeeding** (% infants breastfed within 1hr of birth)	66% 53.8% 45%	(SLMS 2013) (DHS 2013) (MICS 2010)	**54.9%**	(NNS 2014)	↔
7	**IYCF 2: Exclusive breastfeeding rate 0-5 months** (% infants <6 months of age fed exclusively with breastmilk)	41.9% 32.0% 32%	(SLMS 2013) (DHS 2013) (MICS 2010)	**58.8 %**	(NNS 2014)	↑
8*	**IYCF 3: Continued breastfeeding at 1 year** (% children 12-15m fed breastmilk)	86.0% 89.3% 83.9%	(DHS 2013) (SLMS 2013) (MICS 2010)	**86.0%**	(NNS 2014)	↔
9*	**IYCF 4: Introduction of complementary foods** (% infants 6-8m receiving solid/semi-solid/soft foods the previous day)	25.1%	(MICS 2010)	42.4% 63.0%	(SLMS 2013) (DHS 2013)	↑
10*	**IYCF 5: Minimum dietary diversity** (% children 6-23m who received foods from ≥4 groups the previous day)	35.2% 16.2%	(SLMS 2013) (DHS 2013)	**36.4%**	(NNS 2014)	↑
11*	**IYCF 6: Minimum meal frequency** (% children 6-23m who received solid/semi-solid/soft/milk feeds a minimum number of times)[54]	25.9% 38.9% 20.1%	(SLMS 2013) (DHS 2013) (MICS 2010)	**14.4%**	(NNS 2014)	↓
12*	**IYCF 7: Minimum acceptable diet** (composite IYCF indicator)[2]	N/A	N/A	**13.0%** **7.0%**	(SLMS 2013) (DHS 2013)	N/A
13	**Anaemia prevalence in children** (% of children aged 6-59 months with Hb <110g/L)	76%	(DHS 2008)	**76.3%** **79.9%**	(SLMS 2013) (DHS 2013)	↔
14a	**Anaemia prevalence in non-pregnant women of reproductive age** (% of women aged 15-49 with Hb <120g/L)	43.1%	(DHS 2008)	**44.8%** **42.2%**	(SLMS 2013) (DHS 2013)	↔
14b	**Anaemia prevalence in pregnant women** (% of pregnant women aged 15-49 with Hb <110g/L)	62.3%	(DHS 2008)	**70%** **54%**	(SLMS 2013) (DHS 2013)	↔

[53] Source: numerator - number of newborns weighing <2500g at birth - from DHIS-2; denominator - total number of live births (min) or total number of live births weighed (max) within 24h - from DHIS-2
[54] See http://apps.who.int/iris/bitstream/10665/43895/1/9789241596664_eng.pdf for exact definitions of IYCF indicators.
* indicates that these indicators are part of the UNICEF list of core IYCF indicators, but are not part of the WHO 100 Core Indicators.

	Indicator	Previous estimates		Most recent estimates		Trend
15	**Coverage of albendazole for soil-transmitted helminths (deworming)** (% of population requiring preventative albendazole receiving it)	97.7% 85.8%	(EPI 2015) (NNS 2010)	**100.6%**	(EPI 2016)	↑
16	**Vitamin A supplementation coverage** (% children receiving 2 age-appropriate doses of vitamin A in past year)	97.0% 83% 91% 91.1%	(EPI 2015) (DHS 2013) (MICS 2010) (NNS 2010)	**99.98%**[55] **96.1%**	(EPI 2016) (NNS 2014)	↑
17	**Population using safely managed drinking-water services** (% of whole population using safely-managed drinking water services)	65.5% 59.5% 57.3%	(NNS 2014) (DHS 2013) (MIS 2013)	**69.5%**	(MIS 2016)	↑
18	**Population using safely managed sanitation services** (% of whole population using safely-managed sanitation services)	9.8% 10.6% 12.1%	(NNS 2014) (DHS 2013) (MIS 2013)	**16.8%**	(MIS 2016)	↑
19	**Children with diarrhoea receiving oral rehydration solution (ORS)** (% of children <5 with diarrhoea in the previous 2 weeks receiving ORS)	72.6%	(MICS 2010)	**85.1%**	(DHS 2013)	↑
20	Salt intake	N/A	*	N/A	*	
21	Raised blood pressure among adults	N/A	*	N/A	*	
22	Raised blood glucose / diabetes among adults	N/A	*	N/A	*	

Supplementary indicators

	Indicator	Previous estimates		Most recent estimates		Trend
1	**Iodised salt coverage** (% households tested for salt with iodised salt)	62.6%	(MICS 2010)	**80.2%**	(DHS 2013)	↑
2a	**Vitamin A deficiency in children aged 6-59 months** (% children 6-59m deficient in vitamin A)	N/A	N/A	**28.5%**	(SLMS 2013)	N/A
2b	**Vitamin A deficiency in non-pregnant women** (% non-pregnant women aged 15-49 deficient in vitamin A)	N/A	N/A	**2.1%**	(SLMS 2013)	N/A
3	**Screening rate for acute malnutrition** (number of children screened for acute malnutrition / 1,000 children <5)	1,853	(DFN 2015)	**1,914**	(DFN 2016)	↑
4	**Cure rate for severe acute malnutrition** (% children treated for SAM who were cured)	95.4% 93.9%	(DFN 2015) (DFN 2014)	**94.5%**	(DFN 2016)	↔
5	**Cure rate for moderate acute malnutrition** (% children treated for MAM who were cured)	N/A	N/A	**98.7%**	(DFN 2016)	N/A

[55] Source: EPI data from the Child Health / Expanded Programme on Immunisation Annual Report 2016. The figure comes from the number of children aged 6-59 months who received vitamin A supplementation (VAS) in both MCHWs, and therefore assumes that of those children that received VAS in the 2nd MCHW, 100% were among those receiving VAS in the 1st MCHW. The data uses a population denominator for aged 6-59 months of 1,356,795, but it should be noted that the census 2015 figure for 0-59 months was only 1,180,795. According to the census figure, the coverage would therefore be significantly higher than 100%.

Data visualisations

Figure 59: Prevalence of stunting (left) and wasting (right) in children under 5, 2010-14[56]

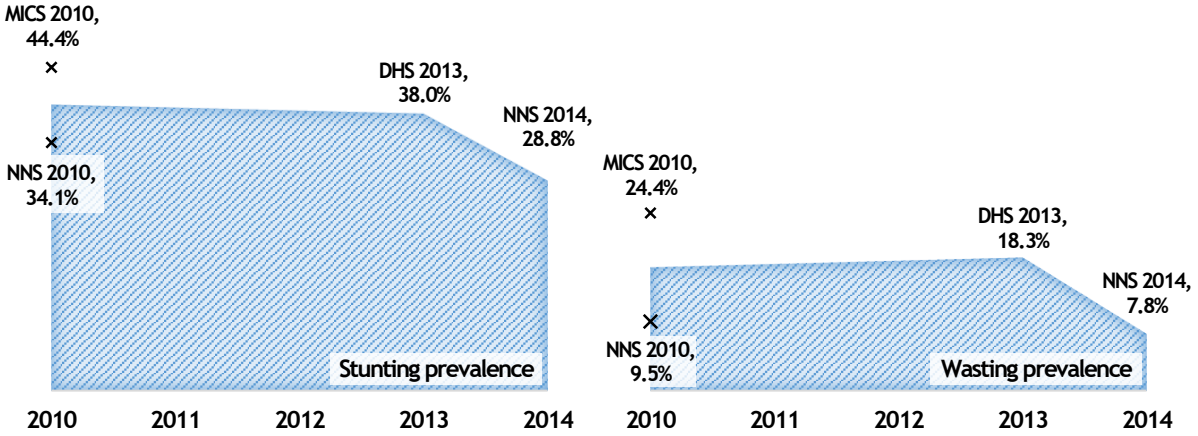


Figure 60: Stunting prevalence by district, 2010 (left) and 2014 (right)[57]

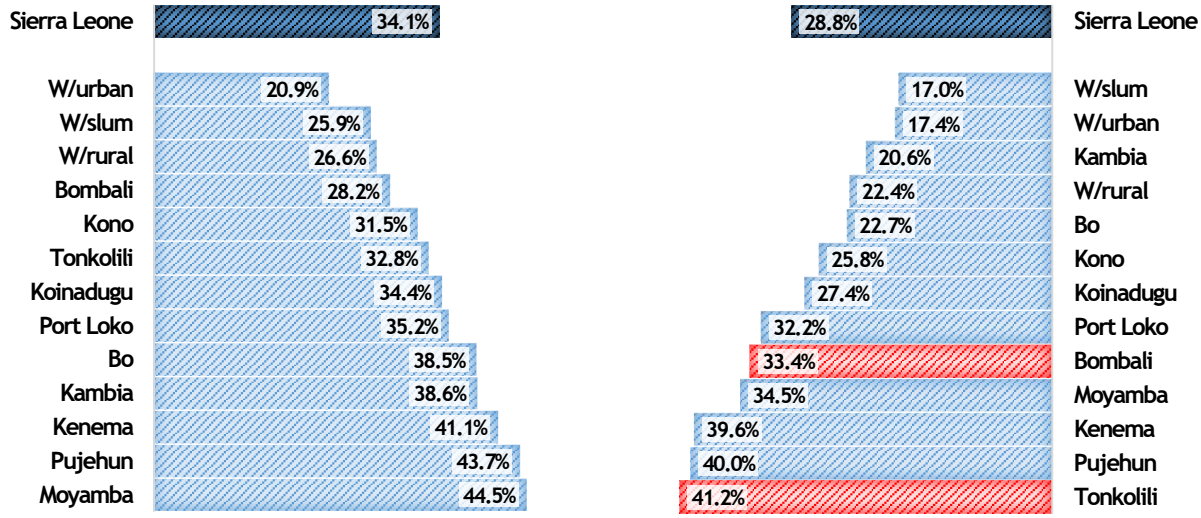
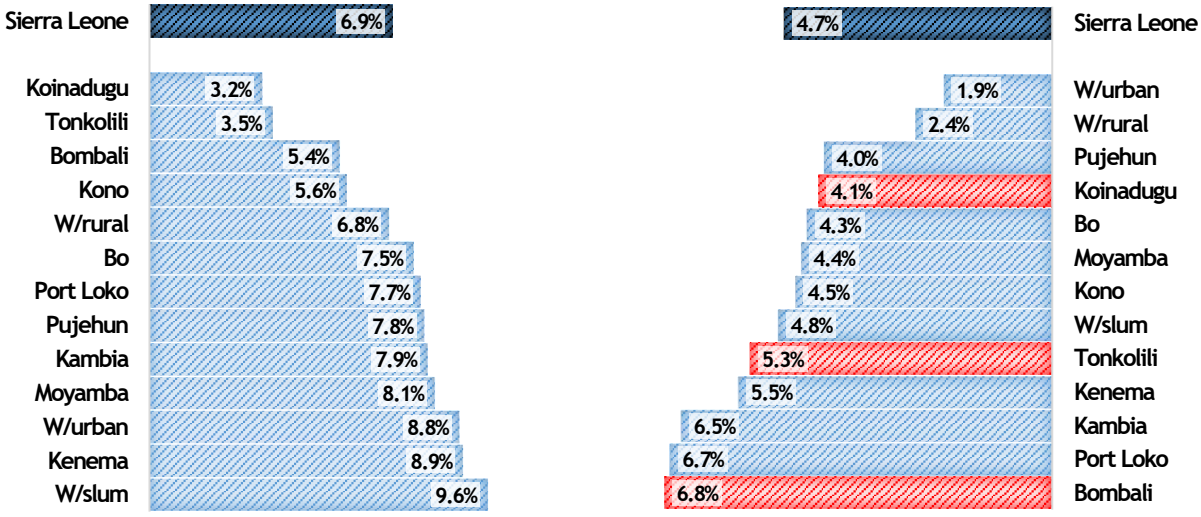


Figure 61: Wasting prevalence by district, 2010 (left) and 2014 (right)[58]



[56] Sources as labelled; where 2 sources were available for the same year the average was taken and the two original datapoints marked with 'X' for that year.
[57] Source: NNS 2010, NNS 2014, lower values are better, red bars indicate worsening performance between 2015 and 2016.
[58] Source: NNS 2010, NNS 2014, lower values are better, red bars indicate worsening performance between 2015 and 2016.

Figure 62: Early initiation of breastfeeding within 1hr (left), exclusive breastfeeding in infants up to 6 months of age (centre), and continued breastfeeding at 1 year (right), 2010-14[59]

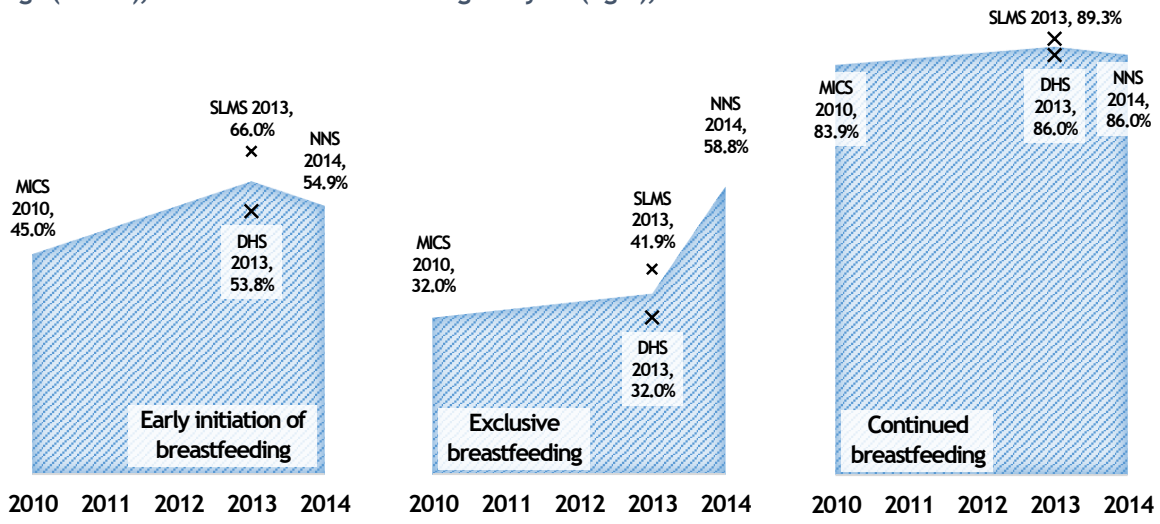


Figure 63: Introduction of complementary foods (left), minimum dietary diversity (centre), and minimum meal frequency (right), 2010-14

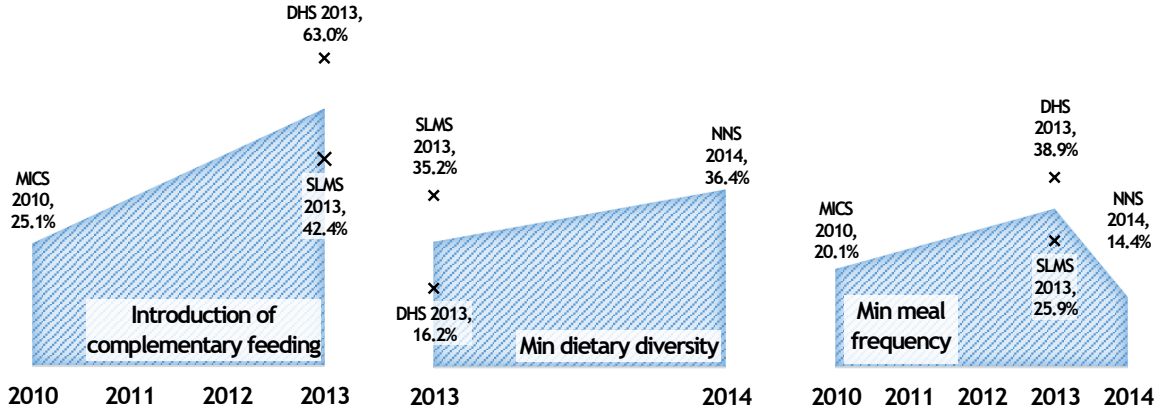
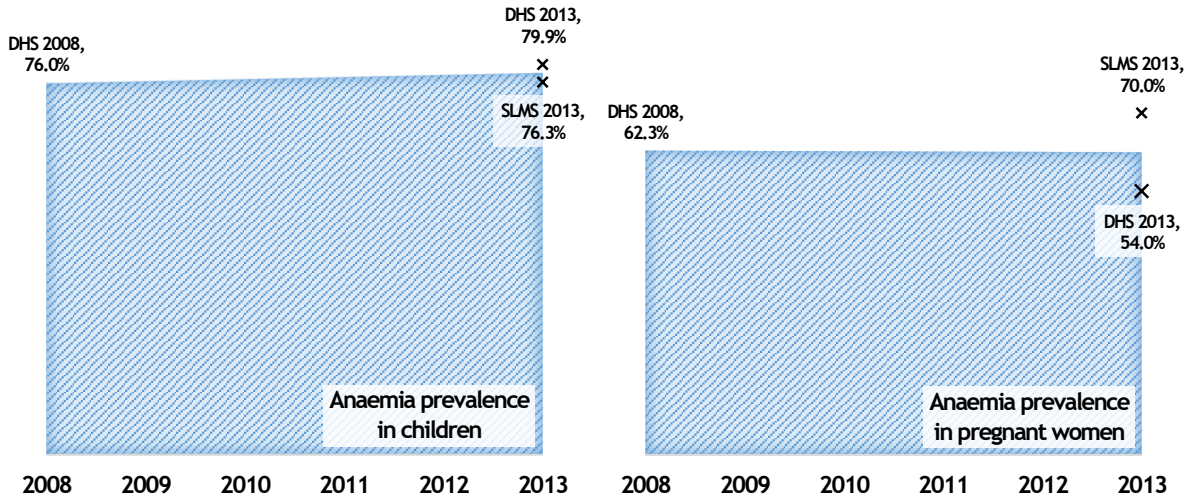


Figure 64: Anaemia prevalence in children (left) and pregnant women (right), 2008-13



[59] Sources as labelled; where 2 sources were available for the same year the average was taken and the two original datapoints marked with 'X' for that year.

Figure 65: Screening rate per 1,000 children <5, 2015 (left) and 2016 (right)

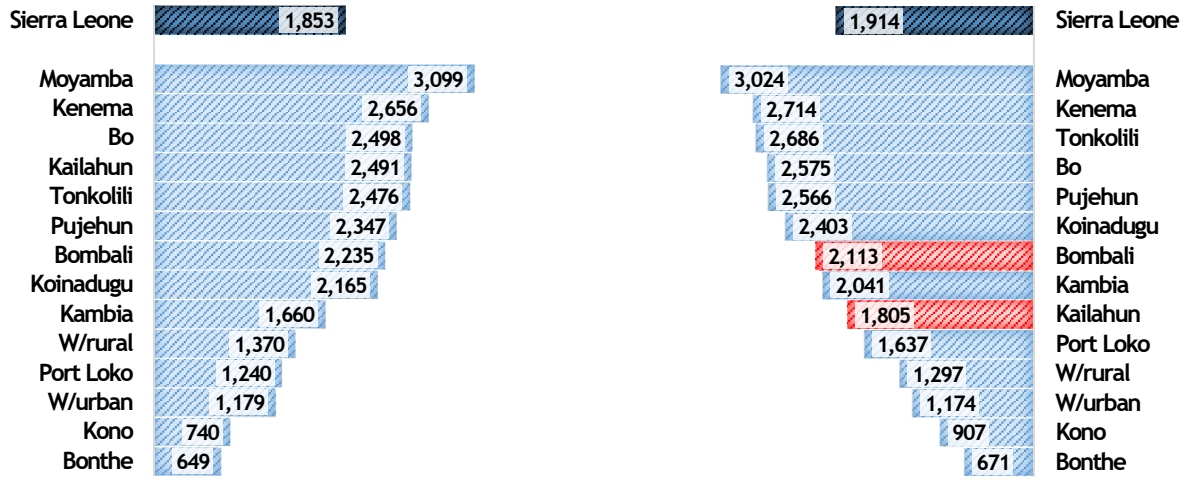


Figure 66: Outcome of screening for acute malnutrition, 2015 (left) and 2016 (right)

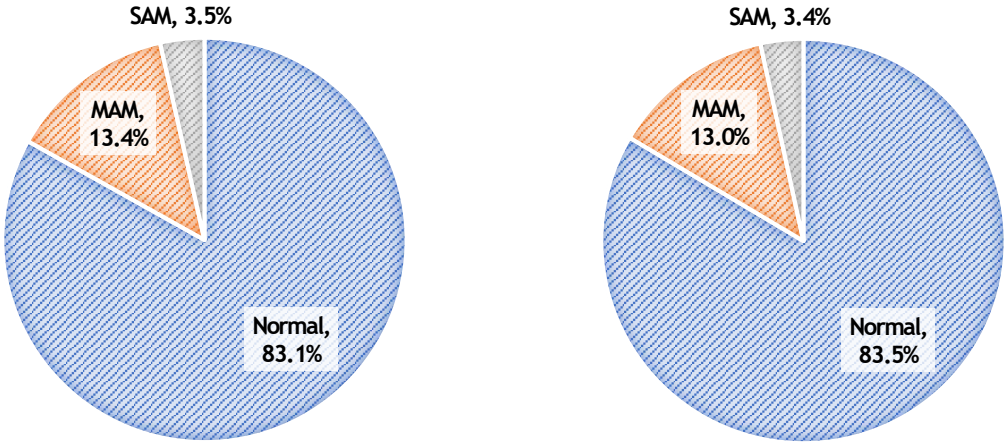
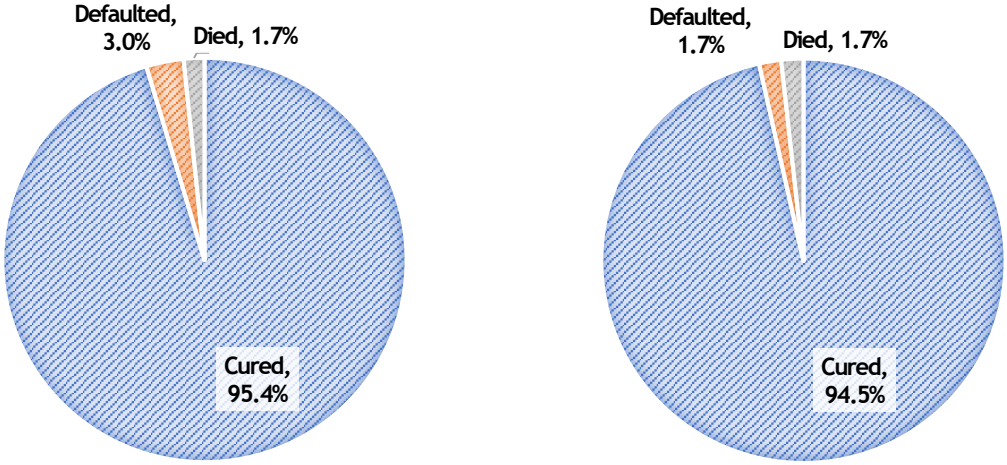


Figure 67: Outcome of treatment for severe acute malnutrition, 2015 (left) and 2016 (right)



Summary of performance across indicators

There have been no surveys capturing data on the main nutrition indicators since SLMS 2013 / NNS 2014, and therefore data presented here on these indicators are only a crude estimate of the performance of Sierra Leone to 2016. The MICS 2017 data will hopefully be available in time for next year's performance report, and this will provide an update on progress in recent years.

The available survey data show us that Sierra Leone is moving in the right direction across the key high-level indicators of stunting and wasting prevalence in children under 5. Stunting prevalence in 2014 was estimated to be 28.8% with severe stunting at 7.8%, and wasting prevalence was estimated to be 4.7% with severe wasting at 1% - all four indicators much improved since 2010. Programme data from childhood nutrition screening, whilst not directly comparable with the survey data, indicate that wasting prevalence in those screened 2016 was 16.4% with severe wasting at 3.4% - not significantly different from the 2015 figures of 16.9% and 3.5%. Regardless of which figures are looked at, these levels are high in absolute terms, and continue to exert a significant social, economic, and health burden on the country.

Drilling down to the district level in the survey data, they indicate that there is a wide range in the prevalence of stunting and wasting across the districts, with stunting ranging from 17% to 41.2% and wasting ranging from 1.9% to 6.8%. Whilst most districts are improving, between 2010 and 2013 both stunting and wasting worsened in Bombali and Tonkolili, and wasting worsened in Koinadugu as well. Programme data from 2016 indicates that in 2016 wasting in those screened was above 20% in 4 districts: Bonthe, Kambia, Kenema, and Port Loko – all of which had similarly high levels of wasting in 2015. Focused action to improve the worst performing districts and those where performance is falling is required going forwards.

The trend in childhood overweight is positive, with 2.2% of children under 5 recorded as overweight in 2014 down from 9.6% in 2010, though this may well have increased again in recent years in line with global and regional trends. Childhood obesity is a precursor to adult obesity and a range of health problems, especially with regard to non-communicable diseases (NCDs), and is therefore an area that the country will need to keep a close eye on.

With regard to IYCF, the picture to 2013/14 is mixed. Early initiation of breastfeeding appears to have stagnated or fallen slightly between 2013-14 to reach 54.9%, while exclusive breastfeeding at 6 months improved between 2010-14 to reach 58.8%. Continued breastfeeding at one year remained stable at 86%, whereas introduction to complementary foods and minimum dietary diversity were low but steadily improving to 42.4-63% and 36.4% respectively. Minimum meal frequency fell to reach a very low 14.4%, and the composite indicator of minimal acceptable diet in infants and young children was also a very low 7-13% in 2013. Overall, whilst there are some promising trends and performance across certain IYCF indicators, taken as a whole much more action is required – particularly in infants / children over the age of 6 months.

Anaemia prevalence remains very high in Sierra Leone, particularly amongst children under 5 (76.3-79.9%) and pregnant women (54-70%). Programme data from 2016 shows that coverage of albendazole for soil-transmitted helminths through maternal and child health weeks (MCHWs) remains high at ~100%, and likewise vitamin A supplementation remains high at ~100%. Survey data from 2013 shows that vitamin A deficiency nonetheless was moderately high in children under 5 (28.5%) though remained low in pregnant women (2.1%). The figure for under 5s may, however, have improved markedly since then due to the success of the MCHWs. Iodised salt coverage was also improving to 2013 up to 80.2%.

Nutrition outcomes are of course intimately linked to WASH performance, and in this area the latest data from 2016 show marked improvements across use of both safely managed drinking water (up to 69.5%) and safely managed sanitation services (still low, but up to

16.8%). The use of ORS by children under 5 with diarrhoea also appears to be improving, reaching 85.1% in 2013 from 72.6% in 2010.

Overall, there is a mixed picture for nutrition. Despite recent improvements in the top line indicators of stunting and wasting, there is much more action on nutrition needed to bring these levels down even further. The variable performance across IYCF indicators, as well as WASH indicators, present a clear case for improvement.

Key activities relating to nutrition in 2016

This section will provide an outline of the key activities related to nutrition in 2016. A more comprehensive description including micro-level targets is available in the DFN annual report.

Maternal, infant, and young child nutrition (MIYCN) unit

The objective of the MIYCN unit is to ensure that infants, children aged 0-24 months, and mothers have access to quality maternal, infant, and young child nutrition services. Activities in 2016 included:

National IYCF strategy and guidelines

The national IYCF strategy and guidelines were finalised and launched in 2016, with the goal of providing a framework for ensuring the survival of infants and young children; enhancing their nutrition, health, growth, and development; and strengthening the care and support services required to achieve optimal IYCF. The strategy contains 11 priority areas spanning: the enabling environment (legislation, policy, and standards); skilled support by the health system; community-based support; communication; quality of complementary feeding; and IYCF in exceptionally difficult circumstances.

Development of IEC / BCC materials

Standardised breastfeeding promotion and education materials were developed based on WHO recommended infant and young child feeding (IYCF) practices. These were distributed through print, electronic, radio, and television media to increase mass awareness and promote exclusive breastfeeding in the first 6 months and complementary feeding from then onwards.

Additionally, locally appropriate complementary feeding recipes for children aged 6-23 months were compiled into a booklet, validated, and disseminated throughout the country. The strength of this tool is that it provides recipes using ingredients that are locally produced, nutrient dense, and available in every part of the country. Each of these recipes were collected from communities and developed and field tested before being included. They each include at least one starchy food, one protein, and legumes/vegetables.

The Sierra Leone Food Based Dietary Guidelines was also developed by a multi-stakeholder team under the stewardship of the MoHS as an educational tool for creating awareness on the importance of consuming healthy diets. It was launched in December 2016 by the First Lady and the Vice President of the Republic of Sierra Leone. It contains a simple list of 8 recommendations for a healthy diet, including a balanced intake of the major food groups, as well as using oil, sugars, and iodised salt in moderation.

Development of tools and guidelines

The 'Child Health Card User Guide' was developed in 2016, a reference document for health training institutions and service providers to support the effective use of the Child Health Card – the key tool for monitoring and tracking the health and nutritional status of all under 5s in health facilities.

A harmonised MIYCN counselling tool and training modules were also developed for community workers including mother support groups (MSGs). This training package is a

comprehensive version of the UNICEF community IYCF (c-IYCF) counselling package, and will support the delivery of optimal community care and feeding practices for MIYCN in community support groups in Sierra Leone. The complementary MSG guidance document was also produced to ensure the optimal functioning of the ~13,200 MSGs in Sierra Leone – setting specific criteria for them to meet.

Training activities

Mother support groups continued to be trained on MIYCN using counselling cards to provide peer counselling for pregnant women, lactating mothers, and mothers of children up to 24m. Community level counselling services were provided to 228,568 mothers (87% of need) on maternal nutrition, breastfeeding, timely introduction of complementary foods, health-seeking behaviour, hygiene practices, and birth spacing. Mother support groups also conducted quarterly active screening at community level using mid-upper arm circumference (MUAC) tape, with referrals to health facilities for children with acute malnutrition.

Building on the success of growth monitoring and promotion (GMP) training carried out in 2015 where 52% of health facilities had health workers trained on GMP, an additional 200 staff were trained in 2016 taking coverage to 72%. This training supports effective nutrition data collection, recording, and reporting, thereby strengthening the planning and delivery of effective nutrition services across the country.

Training of trainers on 'supplementary suckling technique' (SST) was also conducted – including the identification and management of children with severe acute malnutrition (SAM). This will support the ability of mothers to continue to breastfeed their infants with SAM at inpatient facilities (IPFs).

35 nutrition officers were trained in the prevention of stunting, including growth assessment and the application of appropriate interventions to prevent chronic malnutrition in Sierra Leone.

Supportive supervision and institutionalisation of the 6-month contact point initiative

The six-month contact point initiative is an innovative, integrated approach to improve the uptake of essential nutrition actions at the 6-month point. These include: GMP, routine immunisation and vitamin A supplementation (VAS), IYCF, family planning, malaria prevention, and prevention of mother-to-child-transmission of HIV. The 3 remaining districts that had not been trained due to the Ebola outbreak completed their training in 2016 ensuring 100% coverage nationwide.

Effective institutionalisation of this approach into routine RMNCAH service delivery was ensured through supportive supervision that took place quarterly (national to DHMT) and monthly (DHMT to PHU). These PHUs were provided with on-the-job (OJT) training on correct filling of the new child health card, correct interpretation of the WHO reference table and z-scores, and IYCF counselling skills with an emphasis on complementary feeding.

World Breastfeeding Week (WBW)

The annual commemoration of WBW was formally launched by the Honourable Minister of Health and Sanitation in August 2016. The theme was: Breastfeeding: a key to sustainable development, and the event was used as an opportunity to show how joint working to promote and support breastfeeding and effective monitoring can lead to sustainable development in the context of the SDGs.

Code committee meetings

Development of the Sierra Leone Code on the Marketing of Breastmilk Substitutes took place in earnest in 2016 in order to fulfil Sierra Leone's responsibility to the WHO and to support and uphold the gradual gains made nationally in the rates of breastfeeding.

Integrated management of acute malnutrition unit

The goal of the unit is for health workers in all districts to have the capacity to provide equitable and quality integrated management of moderate and severe acute malnutrition (MAM and SAM) services to children under the age of 5. Activities in 2016 included:

Community mobilisation

Throughout 2016, mothers and care-givers were taught by monitors, lead mothers, and CHWs to conduct self-screening of under-5s for malnutrition using colour-coded MUAC tapes. Lead mothers in support groups across all districts were given MUAC tapes, and training was conducted on the interpretation of tape readings with all children in the 'yellow' and 'red' categories referred to the nearest clinic for confirmation and treatment.

Supplementary feeding

WFP conducted its 'Targeted Supplementary Feeding Programme' (TSFP) in 4 the districts identified in the Sierra Leone National Nutrition Survey 2014 as having high rates of acute malnutrition – Kenema, Kambia, Port Loko, and Bonthe. 25,991 children under 5 and 19,455 pregnant and lactating women were treated for MAM in 2016. Furthermore, 506 staff from the four operational districts were trained on the implementation of TFSP.

Additionally, training was conducted for ART counsellors (who identify HIV patients nationwide) and HIV/AIDS support group members on 'food by prescription' for people living with HIV (PLHIV) – with 258 participants trained to date – and for 192 counsellors in TB DOTS centres.

Outpatient therapeutic programme (OTP) and inpatient facility (IPF) programme

Four regional meetings were conducted on the management of ready-to-use therapeutic food (RUTF) for the treatment of SAM. The findings of the OTP verification exercise carried out in 2015 were discussed, particularly around the quality of service delivery during the implementation of IMAM. The meetings resulted in the development of an action plan to address these concerns; inclusion of RUTF into the MoHS list of life-saving commodities; and development of the accountability matrix for RUTF supplies across the supply chain.

In total, there were 35,387 children treated for SAM across 659 sites, with 32,067 cured (90.6%), 1,246 defaulters (3.5%), and 558 deaths (1.6%).

Micronutrient unit

The goal of the unit is to scale up nutrition interventions to prevent and control micronutrient deficiencies, especially in vulnerable and marginalised children and women with a special focus on iron, vitamin A, and iodine deficiency. Activities in 2016 included:

Micronutrient powder (MNP) scale-up

A pilot programme to deliver MNP to communities in two high stunting prevalence districts (Pujehun and Kono) took place between November 2015 and March 2016. 10 PHUs were involved, and PHU staff and MSG members in these communities were trained in the process, with 40 mother-child pairs enrolled. The results from the pilot were impressive, with the proportion of mothers reporting their child was ill in the preceding 2 weeks falling from 78% at baseline to 24% at endline; care-seeking from health facilities as opposed to traditional healers or community members increasing from 87% to 94%; reported incidence of diarrhoea, cough, malaria, and fever all decreasing; and quality of caregiver handwashing practices increasing. Caregivers also had positive perceptions regarding the Pikin Welbodi Powder itself, as well as regarding an improvement in health and activity levels following use of the powder.

Following the success of the pilot, staff from the remaining PHUs in these two districts were trained alongside identification of mothers and caregivers by lead mothers and CHWS for

enrolment into the programme. By December 2016, MNP for home fortification had been distributed to 15,900 children aged 6-23 months in Kono, and 9,824 children aged 6-23 months in Pujehun.

National anaemia working group

A national anaemia working group was established in response to the recommendations in the SLMS 2013 which highlighted the high prevalence of anaemia in Sierra Leone. This multi-sectoral multistakeholder working group developed a draft anaemia reduction strategic plan, and brought together stakeholders from blood services, malaria, HIV/AIDS, and RMNCAH to discuss the contribution that each area can make to tackling anaemia.

Maternal and Child Health Weeks (MCHWs)

The biannual MCHWs took place in June and November, delivering VAS and deworming to targeted age-groups of children across Sierra Leone alongside counselling of mothers on hygiene care practices for under-5s. The coverage of these interventions remained high – for VAS reaching a minimum of 99.98% across the two MCHWs, and for deworming achieving a minimum of 100.6%.[60]

Clinical nutrition unit

The goal of the unit is to ensure the provision of an optimal diet to patients in hospitals to complement their clinical management, including capacity building of catering staff to maintain high quality meal preparation; and to increase awareness on the prevention, control, and effective management of NCDs. Activities in 2016 included:

Meal service in government hospitals

The provision of 3 daily meals in government hospitals overseen by clinical nutritionists continued in 2016, including special diabetic, low protein, soft/liquid, and paediatric diets. These specialised hospital menus were also reviewed and updated. On average, 2,496 patients were fed daily across 23 government hospitals, with monitoring supported by the development of new reporting tools.

A kitchen training manual was also developed and disseminated to all clinical nutritionists, and this was used to conduct standardised training for 148 kitchen staff across the country across a range of areas.

NCD clinic

In close collaboration with medical superintendents, NCD clinics were established in regional district hospitals in Bombali, Kenema, and Bo. Weekly outpatient clinics saw a total of 446 diabetics and 602 hypertensives in 2016.

In addition to this, weekly NCD clinics were held at Connaught hospital by a physician specialist, attended by 1,035 diabetics and 120 hypertensive patients in 2016. The objectives of these clinics were to provide nutrition consultations and counselling; to allow patients to ask questions and engage in meaningful discussions, as well as increasing their awareness of their disease and its management; and to identify complications and take precautionary measures.

In addition to these NCD clinics, a bi-monthly 'healthy heart' health walk was commenced in May 2016 to promote healthy living through increased exercise. These are open to the public and free to participate.

[60] As noted previously, coverage levels this high alongside the lower coverage indicated by the DHS 2013 survey indicate that there may be data quality issues with these data.

Nutrition surveillance unit

The goal of the unit is to conduct routine nutrition surveillance of children accessing PHUs to support health monitoring and planning of essential nutrition interventions.

End-line nutrition perception survey

A survey was conducted to understand how nutrition is perceived in Sierra Leone – including on capacity to conduct surveillance. It found that knowledge of the nutrition situation is good, and much improved from 2014; perception of government capacity to conduct nutrition surveillance through surveys and routine systems was also improved, though perception of capacity was average; and the perception of nutritionists of their ability to carry out surveillance was also good, with over 77% indicating that they feel confident in all / most aspects of nutrition surveillance.

Routine surveillance

Monthly nutrition surveillance data was reported through HMIS / DHIS-2, and showed that of all children screened at facility level, between 12-14% had MAM and 3-3.6% had SAM during 2016. The nutrition surveillance officer also received further training in DHIS-2 and M&E.

Operational research unit

The operational research unit carried out a pilot study on a screening tool for stunting for use at community level across 5 catchment communities: Hastings, New London, Rogbangba, Goderich, and John Thorpe. The study showed a stunting prevalence of 25.4% with 10.4% severely stunted in the first screening of 906 children in September 2016; and a stunting prevalence of 37.2% with 14.2% severely stunted in the second screening of 896 children in November 2016. A key finding of the study was that mothers could correctly highlight what they were taught, but this did not translate into behavioural changes.

Key challenges relating to improving nutrition in 2016

Despite successfully delivering the majority of the planned programme of work in 2016, several challenges were identified during the year. These included:

- The Ebola outbreak affected the implementation of activities in the early part of the year, but the DFN recovered well towards the middle and end of the year.
- There was a high turnover rate of IMAM trained healthcare workers at the OTP level, which made it difficult to maintain quality service delivery.
- There were considerable logistical challenges such as stock-outs of amoxicillin at the OTPs; inadequate supplies for effective management, monitoring, and supervision; and a slow procurement process that led to delays in implementation of activities.
- There were ongoing issues with reporting and data management, including record keeping at PHUs and issues with timeliness, completeness, and accuracy.
- The supplementary feeding programme supported by WFP only took place in 4 districts despite a national need for this.
- There continue to be an inadequate number of treatment sites for the management of SAM with complications.
- There continue to be issues with late disbursement of funds, e.g. for food contractors
- The establishment of MSGs are wholly donor driven and donor dependent.
- Specific challenged related to individual activities are highlighted in the DFN annual report.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed actions and opportunities identified for 2017 relating to improving nutrition include:

- The post-Ebola recovery plan highlighted the central role of nutrition in tackling maternal and child mortality. In 2017, DFN will build on this newly raised profile for nutrition to advocate for scaling up nutrition activities nationwide.
- Likewise, DFN will maximise the opportunity provided by the Scaling Up Nutrition (SUN) country office being located in the office of the Vice President. This allows stakeholders from across MoHS and partners to be brought together to go further and faster in multisectoral, multistakeholder action to improve nutrition outcomes in Sierra Leone.
- Another aspect of integrated programming planned for 2017 is to increase the integration of preventative and healthcare interventions, e.g. through the combination of MCH weeks and weekly reporting on community screening with MUAC tapes.
- DFN will also focus on increasing the participation of communities in improving the health and nutrition outcomes of themselves and their families, particularly through self-screening and MSGs.
- DFN will also deploy district nutritionists to support the implementation and monitoring of nutrition programmes, as well as providing supportive supervision.
- There is also plans in place to strengthen the supply chain with regard to RUTF; to use the new field monitoring tools to track performance of MSGs using colour coding to support the prioritisation of supportive supervision; and to establish an anaemia working group at national level to meet once every two months to bring together a wide range of stakeholders to tackle this critical issue for the health of our population.
- Of course, these activities will all take place in addition to the routine work of the Directorate as described in this chapter.

Area 7: Environmental health and sanitation

Introduction

Many of the major causes of death and disability in Sierra Leone can be traced back to challenges with environmental health and sanitation (EHS). Examples include diarrhoea, respiratory tract infections, and the high prevalence of stunting and wasting in children under 5. These are all major causes of the high rates of infant and child mortality seen in Sierra Leone, and so clearly there can be no progress on child health or indeed health across the life course without significant investment in EHS.

Additionally, EHS interventions are highly cost-effective and have enormous health and socio-economic benefits across the life-course. They are also fundamental from a human rights perspective – particularly with regard to access to clean water and sanitation. However, a universal challenge with preventative actions is that because they have a lower profile than the downstream disease areas they can prevent, they often struggle to obtain adequate resources.

To tackle these issues, the Directorate of Environmental Health and Sanitation (DEHS) works across 5 major areas: housing and integrated vector management; water, sanitation, and hygiene (WASH); port health and industrial safety / occupational health; food safety; and integrated waste management / clinical waste management. This is a broad remit, but Sierra Leone has major challenges to overcome in all of these areas. Through working together with other key Directorates across the MoHS and across the GoSL more broadly, improvements are starting to be made.

This chapter will provide an overview of performance across high-level indicators related to environmental health and sanitation and a brief discussion of these data; then outline the activities carried out by DEHS in 2016; the challenges faced; and conclude with a brief look forwards to 2017.

Core indicators

	Indicator	Previous estimates	Most recent estimates	Trend
1	**Population using improved source of drinking-water**[61] (% of whole population using improved source of drinking water)	65.5% (NNS 2014) 59.5% (DHS 2013) 57.3% (MIS 2013)	**69.5%** (MIS 2016)	↑
2	**Population using improved sanitation facilities** (% of whole population using improved [non-shared] sanitation facilities)	9.8% (NNS 2014) 10.6% (DHS 2013) 12.1% (MIS 2013)	**16.8%** (MIS 2016)	↑
3	**Population using modern fuels for cooking / heating / lighting** (% of total households using modern fuels)	1.8% (DHS 2013) 1.0% (MIS 2013)	**1.3%** (MIS 2016)	↔
4a	**Air pollution levels (µg/m^3)**[62] (Mean annual exposure to PM2.5 particulate matter)	22.1 (GBD 2014) 25.1 (GBD 2013)	**19.3** (GBD 2015)[63]	↓
4b	**Population exposed to air pollution levels exceeding WHO guidelines** (% population exposed to air PM2.5 levels exceeding WHO guidelines)	99.97% (GBD 2014) 100% (GBD 2013)	**99.97%** (GBD 2015)	↔

Data visualisations

Figure 68: Population using improved sources of drinking water (left) and improved sanitation facilities (right), 2008-16

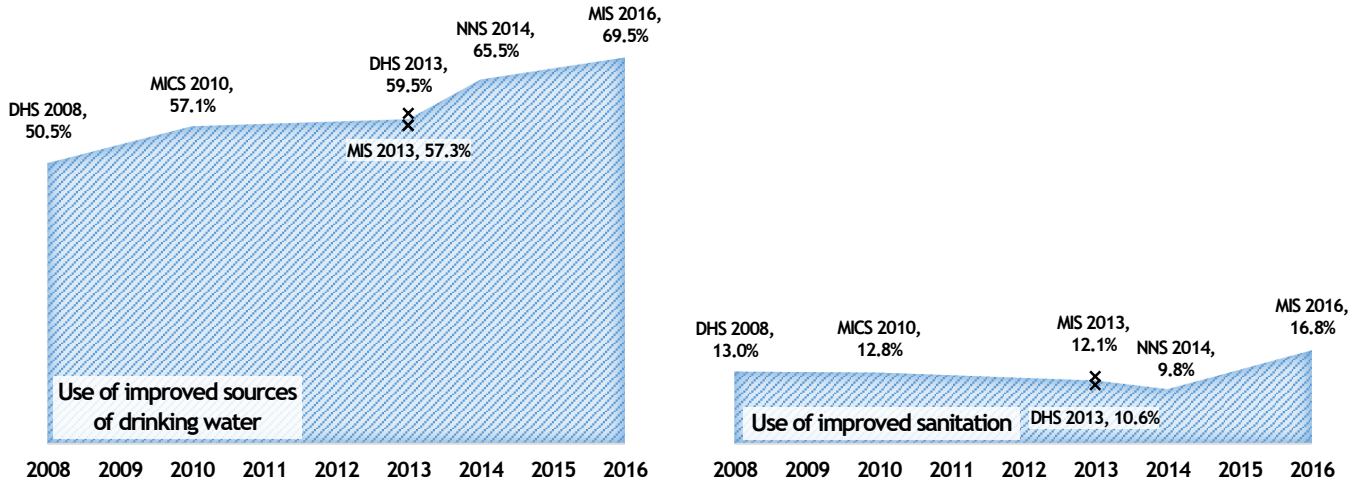
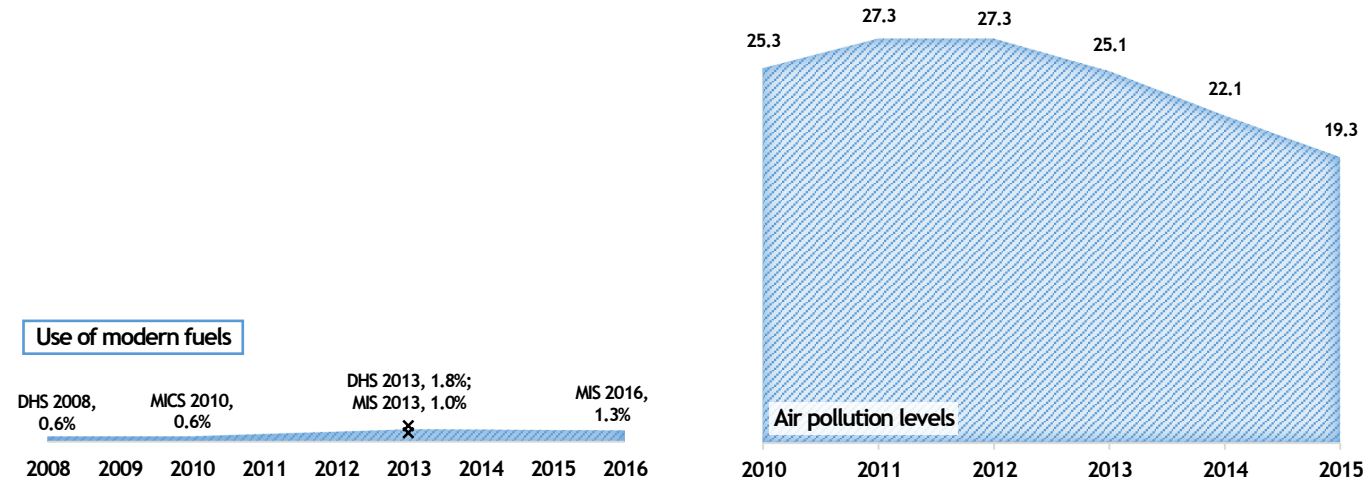


Figure 69: Population using modern fuels (left) and air pollution levels (µg/m^3 of PM2.5) (right) 2008-16



[61] NB: The WHO 100 Core Indicators for drinking water and sanitation are: 'Population using safely managed drinking water services' and 'Population using safely managed sanitation services' which have slightly different definition to the ones used here, but these are the indicators for which data are collected in Sierra Leone.
[62] NB: The WHO 100 Core Indicator for air pollution is slightly different in that it focuses on cities, but this is the only data available for Sierra Leone.
[63] Source: Brauer, M. et al. 2016, for the Global Burden of Disease Study 2015.

Summary of performance across indicators

On these 4 high-level indicators, there is both room for optimism and a clear indication of the long road ahead. Use of improved sources of drinking water has steadily improved across Sierra Leone from 50.5% in 2008 to 69.5% in 2016. Use of improved sanitation facilities has shown mixed performance, rising from a low base of 13.0% in 2008 to 16.8% in 2016 - clearly far below a reasonable target for the country.

Whilst district breakdowns were not calculated for improved water and sanitation in the MIS surveys, the urban / rural split shows that performance on both these indicators is much higher in urban areas than rural areas: whilst almost 91% of the urban population uses improved sources of drinking water, only 55% of the rural population do; and 28% of the urban population use improved sanitation facilities, whilst only 9% of the rural population do. These are worrying figures from the perspective of the prevention of ill-health in rural areas.

The use of modern fuels in Sierra Leone has always been very low, and shows little signs of improving – rising from 0.6% in 2008 to 1.3% in 2016. Likewise, whilst the estimated levels of air pollution are falling, 99.97% of the population are still estimated to be exposed to levels exceeding the WHO guidelines. These areas remain major contributors to child mortality through their effect on air quality and respiratory tract infections.

Overall, progress is being made on WASH areas but not on indoor air pollution, and there is a great deal of progress still required to ensure that environmental health and sanitation is at an acceptable standard in Sierra Leone.

Key activities relating to environmental health and sanitation in 2016

This section will provide an outline of the key activities related to environmental health and sanitation in 2016. A more comprehensive description is available in the DEHS annual report.

Leadership and governance

2016 was a busy year for the legislative and regulatory space for environmental health and sanitation, with activities including:

- Developing the environmental health policy and strategy.
- Developing the new food safety bill – currently placed before Parliament.
- Reviewing the 1960 Public Health Ordinance (PHO) 1960, and developing the first draft of the new PHO.
- Developing a port health operating plan.
- Developing activity plans and monitoring frameworks for WASH in communities and health facilities, and for the new Expanded Sanitation Inspection and Compliance Enforcement (ESICOME) programme.
- Developing a plan and budget for 'Clean Freetown' programme with Freetown City Council.

Water, sanitation, and hygiene (WASH)

The WASH team undertook the following activities in 2016:

- Conducting key coordination meetings with WASH partners on a range of WASH related issues - particularly monitoring of WASH facilities in communities, PHUs, and schools; and community-led total sanitation (CLTS).
- Developing national WASH standards and guidelines, and constructing / rehabilitating 435 PHUs from a WASH perspective.
- Conducting a mapping exercise of water points across Sierra Leone.
- Developing a national CLTS protocol; training 2 staff from MoHS and UNICEF as regional facilitators; training district CLTS facilitators; conducting a consultative meeting with community stakeholders on CLTS at district level; and 'triggering' 400 communities on CLTS.

Integrated waste management (IWM)

The IWM team undertook a range of activities in the broad area of integrated waste management. These included:

- Assessing faecal management practices in urban and rural Sierra Leone, and undertaking M&E of solid waste management activities.
- Undertaking healthcare waste management activity monitoring culminating in a yearly evaluation report.
- Developing implementation plans for industrial waste management activities.
- Validating the environmental social management framework (ESMF) and the environmental management plan (EMP)

Housing and vector control

The housing and vector control team undertook the following activities in 2016:

- Developing the ESICOME programme plan, and launching and operationalising it.
- Developing information, education and communication (IEC) and M&E materials for ESICOME operations.
- Developing the integrated vector management (IVM) policy and launching it at the national level.

Food safety

The food safety team undertook the following activities in 2016:

- Collection of water samples from fishing establishments and ice plants for testing, covering 11 fishing establishments in 2016.
- Inspections and follow-up of food processing establishments, meat slaughterhouses, food storage and retail facilities, and fishing vessels to assess hygiene and sanitation standards, and certification of the above as appropriate. 118 fishing vessels were inspected in 2016; destruction of fish products was conducted twice; warning letters were sent to 9 companies; and denial of certification was issued to 7 companies.
- Inspection of products including fishing products for export.
- Registering of 170 food handlers in Makeni municipality.
- Collaborating with other Ministries, Departments, and Agencies on food safety.

Port health

The port health team undertook the following activities in 2016:

- Boarding all vessels entering the country or in territorial waters for health inspections.
- Checking vessels for International Health Regulations (IHR) requirements such as Maritime Declaration, valid vaccination list for passengers and crew, fresh water analysis certificate, ship sanitation certificate, and valid medical chest.
- Inspecting all food, used clothing, and salt imported and exported in containers.
- Ensuring that all used clothes are fumigated and certificated.
- Ensuring that all unfit imported food is isolated for destruction.
- Mapping port health and border crossing points together with population mobility pattern mapping in Kambia and Port Loko.
- Selecting port health officers for training and deployment.
- Completing monthly reports for the head of port health.

Occupational health

The occupational health team undertook the following activities in 2016:

- Inspection of all industries for occupational and safety hazards.
- Sensitising workplaces on health and safety standards.
- Developing an occupational health and safety manual.

Monitoring and evaluation

The M&Es in the directorate prepared the detailed WASH plan for the 10-24 month plan and the annual work plan for 2016, as well as conducting joint WASH coordination meetings including around WASH in health facilities and schools. As usual, weekly updates on the operation of the directorate were prepared throughout the year.

Key challenges in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- Shortage of skilled manpower, office space, and equipment – and in particular computers, printers, internet connectivity, and scanners.
- Inadequate staffing for effective coordination of activities across the country.
- Poor communication between management and staff.
- Inadequate financial and logistical resources across all programme areas, including issues with timely disbursement of funds from partners.
- Issues in the establishment of sanitary courts to prosecute individuals in this area.
- Lack of equipment, tools, and logistical support required to effectively carry out port health screening, e.g. standardised templates for reporting, vehicles, vaccination supplies, and disinfectant.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed activities and actions for 2017 relating to improving environmental health and sanitation include:

- Completing the new public health ordinance, environmental health and sanitation policy and strategy, and food safety act.
- Training port health and border-crossing staff and operationalising the port health plan.
- Operationalising the environmental social management framework (ESMF) and environmental management plan (EMP).
- Launching and implementing the ESICOME programme in the regions.
- Reviewing the Integrated Waste Management Policy and Strategy.
- Developing the community water quality monitoring and surveillance plan for all districts.
- Establishing a WASH database for all health facilities, schools, and communities.
- Ensuring effective coordination and M&E for WASH functions by WASH partners.
- Establishment of a new Food Safety Authority in Sierra Leone.
- Strengthening the entomology unit.

Area 8: Health security and emergencies

Introduction

The Ebola Virus Disease (EVD) outbreak in 2014-15 caused devastation across all spheres of life in Sierra Leone: health, economic, social, and cultural. In total, there were 14,124 cases – the most in any country affected by the outbreak – and 3,956 deaths, including significant numbers of frontline health care workers. The outbreak highlighted the weaknesses in the capacity to prevent, detect, and respond to disease outbreaks in Sierra Leone, and spurred the Ministry of Health and Sanitation (MoHS) and its partners to push forwards with an ambitious plan to strengthen its capacities in this area.

The country is now Ebola-free, but ongoing vigilance is important. Many other diseases require constant surveillance and response, including Lassa fever, Yellow Fever, and – as the outbreak in 2016 showed – measles. In order to ensure this area received the political and financial resources necessary to prevent future outbreaks of infectious diseases, it was made one of the key results areas of the President's Recovery Priorities for health: to prevent, detect, and respond to epidemics and ensure zero EVD cases.

This chapter will start by summarising data from the annual epidemiological report, then provide an overview of key activities in the area of ensuring health security and emergencies. In future years, the newly developed infrastructure around health security and emergencies should be able to support more comprehensive reporting across these areas.

Summary of priority diseases, conditions, and events recorded through the Integrated Disease Surveillance and Response (IDSR) system in 2016

Disease	Number of cases	Number of deaths	Case Fatality Rate (%)
Malaria cases	2,732,006	N/A	N/A
Malaria tested	2,699,157	N/A	N/A
Malaria positive	1,622,948	2,512	0.2
Severe pneumonia	88,568	469	0.5
Suspected typhoid fever	75,097	317	0.4
Severe malnutrition	26,652	174	0.7
Diarrhoea with severe dehydration	26,152	106	0.4
Suspected measles	8,133	31	0.4
Blood diarrhoea	6,824	41	0.6
Animal bites	2,132	27	1.3
Adverse events following immunisation	125	0	0
AVHF	79	25	31.6
Suspected meningococcal meningitis	68	10	14.7
Acute flaccid paralysis	57	0	0
Suspected yellow fever	51	1	2
Neonatal tetanus	36	13	36.1
Acute jaundice syndrome	26	2	7.7
Suspected cholera	1	0	0
Suspected anthrax	0	0	0
Suspected buruli ulcer	0	0	0
Suspected chikungunya	0	0	0
Suspected dengue	0	0	0
Dracunculiasis	0	0	0
Maternal death[64]	0	618	
Suspected monkey pox	0	0	0
Suspected plague	0	0	0
Suspected influenza due to new subtype	0	0	0
Suspected smallpox	0	0	0

[64] Maternal deaths are also captured through the MDSR system, which showed a higher figure of 706 deaths in 2016.

Key activities relating to health security and emergencies in 2016

This section will provide an outline of the key activities related to health security and emergencies in 2016. More detailed descriptions are available from the annual reports of the relevant directorates and units.

Emergency preparedness and response (EPR)

Systems strengthening around emergency preparedness and response allowed Sierra Leone to respond effectively to the new confirmed case of EVD in January 2016 in Tonkolili district, with 131 contacts monitored across 4 districts and 214 contacts and contacts-of-contacts receiving the experimental Ebola vaccine – a significantly improved response to what was seen just one year earlier.

Throughout the rest of the year, following the declaration of Sierra Leone being free of active transmission of the Ebola virus, a wide range of preparedness and training activities taking place. These included management of IPC-compliant isolation and treatment facilities, and the establishment of Public Health Emergency Management Committees (PHEMCs) to support effective coordination.

A national risk profiling exercise was carried out in September 2016, bringing together staff from MoHS with key development partners to identify the major hazards facing Sierra Leone – with Lassa fever being identified as a major threat. This was followed up by the development and simulation testing of national emergency response plans for major events including EVD, cholera, Zika, and flooding. This activity stream culminated in a national simulation of a yellow fever outbreak in December 2016, bringing together national and district MoHS staff with development partners including WHO, CDC, and Public Health England (PHE).

Rapid response teams (RRTs) of 12 multi-disciplinary team members were established nationally and in each district to support rapid response in the event of an outbreak or emergency. Training materials for these teams were developed prior to training being rolled out across the country.

Looking ahead to 2017, EPR will continue to be strengthened through a range of activities, including supporting the Public Health National Emergency Operations Centre (PHNEOC) to improve the capacity to detect and response to outbreaks and emergencies; developing and implementing updated guidelines and management plans; and supporting the activities of the RRTs at central and district level.

Integrated Disease Surveillance and Response (IDSR)

As highlighted in the chapter on Health Information Systems (HIS), the IDSR system has been revitalised for 2016 and is now effective across the country. 2,156 health workers are trained on disease detection, reporting, and outbreak response; and IDSR supervision visits took place across 170 health facilities in 2016.

The IDSR system was designed to support weekly near real-time monitoring of diseases and significant events, and by the end of 2016 93% of health facilities on average were submitting weekly reports – far in excess of the original target of 80%. In addition to this reporting, 92% of suspected outbreaks were notified to district health authorities within 24 hours of detection, and rapid response was initiated within 48 hours for 90% of cases. All in all these are remarkable figures that represent a step-change in what the country was capable of delivering in 2015.

39 staff were trained in data management for IDSR, leading to an IDSR data quality audit in all districts and 88 health facilities. This involved interrogating the IDSR data for accuracy, completeness, and timeliness and provide recommendations for strengthening the system.

The e-IDSR system was also developed and rolled out to replace the paper-based system in all 14 districts, with 133 staff trained in its use. This will enhance the quality of data, as well as improving storage and access.

A community-based surveillance (CBS) system was developed to complement the existing system, and this was also rolled out in 2016 in 9 districts. This will increase the sensitivity of the surveillance system for early detection and rapid response. 909 master trainers and 8,449 CHWs were trained to do CBS, with 10 diseases and public health events prioritised for reporting at community level. In total, 6% of the suspected outbreaks and public health alerts were detected and reported through this system in 2016.

Finally, Sierra Leone took part in an International Health Regulations (IHR) Joint External Evaluation (JEE) exercise in October – November 2016. This involved staff from MoHS as well as experts from the governments of Ethiopia, Germany, Liberia, Senegal, UK, and USA; and experts from the WHO, FAO, and OIE. The full report is available online, and demonstrates Sierra Leone's peer-to-peer scores across all core capacities. This will be used to develop a five-year action plan to build national capacity in the IHR core capacities.

Infection prevention and control (IPC)

One of the major lessons learned from the EVD outbreak was the weakness of IPC in Sierra Leone, and the importance of IPC in disease prevention and control. In 2016, assessments of non-Ebola health facilities showed that only 13% were compliant with essential IPC standards, 24% were partially compliant, and 63% had low compliance.

Accordingly, activities to strengthen IPC performance across Sierra Leone in 2016 included:

- IPC supervision on on-the-job training in 333 facilities, with 8,221 HCWs trained, and provision of IPC documents and posters and liquid hand soap.
- Roll-out of the updated national IPC/WASH assessment tool through training of 90 IPC officers across the country, including on the use of DHIS-2 for IPC monitoring.
- Development of the national IPC 3-year action plan to support greater coordination of partners in IPC. This was followed by a workshop on developing standard operating procedures (SOPs) on IPC culminating in the development of 20 SOPs to guide health workers in integrating IPC with patient care.
- Monthly district IPC committee meetings, quarterly advisory meetings, and bi-annual coordination meetings. IPC committees have now been established in 13 districts and 25 government hospitals, with district IPC focal points taking over from their WHO counterparts in December 2016.

Laboratory strengthening

Recognising the importance of a well-functioning laboratory system for effective disease detection and response, the Ministry has worked together closely with development partners to strengthen the capacity of the laboratory network in Sierra Leone. The national laboratory system now comprises clinical-community and hospital diagnostic laboratories; three regional laboratories at Bo, Makeni, and Kenema; and a central hub of public health and specialised laboratories.

A range of training activities were implemented to upskill laboratory staff across a range of priority areas, including 60 staff on safe collection, packing, and testing of disease samples, including biosafety, IPC, and waste management; 17 staff on standard procedures for essential clinical tests; 15 staff on microbiological culture and antibiotic susceptibility testing; and 80 staff on biosafety and biosecurity, with the appointment of 15 biosafety officers to oversee implementation of biosafety.

Finally, the quality of laboratory data was improved through the development of standardised laboratory reporting forms and registers; electronic data capture tools; upgrading the IT infrastructure; training 50 data clerks and support staff to do data entry; and conducting monthly supervision visits on laboratory data quality.

Ebola survivors

Sierra Leone has 3,032 registered EVD survivors who report a range of symptoms from neurological, ear, and eye complaints to mental health issues. Cognisant of the need to provide comprehensive care to this group, the Ministry rolled out the Comprehensive Programme for EVD Survivors (CPES) in 2016. This included the training of frontline health workers on survivor care, with 12 clinical training officers, 226 healthcare workers from 104 PHUs, and 14 referral coordinators at government district hospitals trained.

In addition to the training of HCWs, 152 survivor advocates were also trained to ensure that survivors are able to access healthcare when required, and to conduct monthly home-based follow-up visits with psychosocial support.

Finally, data analysis was also undertaken for the national semen-testing programme to assess persistence of the Ebola virus in the bodily fluids of Ebola survivors.

Area 9: Health education and health promotion

Introduction

The WHO states that health promotion is the process of enabling people to increase control over, and improve their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions. Accordingly, it is a key component of preventing ill health and improving population wellbeing in Sierra Leone.

The 'Health Education Division' (HED) in the Directorate of Primary Health Care (DPHC) provides a support service that energises technical programmes across the MoHS through information, education, and communication (IEC) / behaviour change communication (BCC) activities. The priorities shift from year to year to reflect changes in the major diseases and risk factors in Sierra Leone – for example shifting to incorporate the need to prevent the rise of non-communicable diseases (NCDs).

As a support service, there are no 'hard' indicators attached to health promotion and health education. Accordingly, this chapter will provide an overview of activities carried out by HED in partnership with other Directorates in 2016; the challenges faced; and conclude with a brief look forwards to 2017.

Key activities in 2016

This section will provide an outline of the key activities related to health education and health promotion in 2016. The HED annual report provides a more detailed description.

National immunisation days (NIDs)

In 2016, DRCH carried out four rounds of national polio supplementary immunisation activities (SIAs). These involved teams going door to door providing polio vaccination regardless of previous immunisation status. In order to support these NIDs, HED provided the following social mobilisation activities:

- Producing and broadcasting jingles in 10 local languages
- Organising interactive radio and TV programmes at national and district level
- Organising press briefings
- Producing and distributing cotton banners, awareness cards, and flash cards to districts/PHUs
- Conducting monitoring of social mobilisation activities in hard to reach districts
- Organising a national launch in Western Area

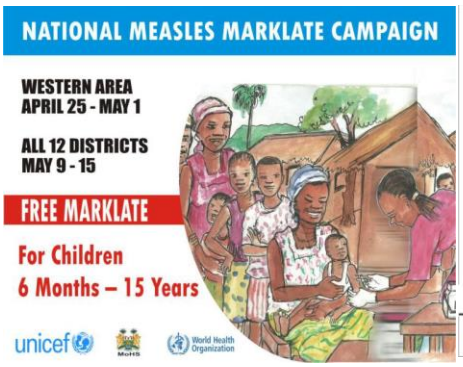
Maternal and child health weeks (MCHWs)

MCHWs are twice yearly integrated health events conducted nationwide by MoHS. HED provided the following social mobilisation activities in support:

- Supporting the national launch and health fairs in Kabala and Port Loko. These were graced by the Deputy Minister of Health and Sanitation, senior leaders from MoHS, and key development partners.
- Producing and broadcasting a jingle in 10 local languages on 45 radio stations nationwide before and during the campaign period.
- Conducting 10 radio and 1 TV discussion programme in Western Area.
- Briefing 30 print and electronic media houses on campaign dates, strategies, and interventions. These involved key staff from MoHS and development partners addressing questions and concerns raised by participants.
- Printing and distributing 1,185 cotton banners, 20,000 awareness cards, 60,000 flyers, and 20,000 posters to districts to support sensitisation activities. 3 banners per ward were distributed by community volunteers recruited by DHMTs.
- Organising sensitisation and advocacy meetings for key community stakeholders to solicit their participation and compliance with the campaign.

Integrated measles campaign

To respond to the national measles outbreak that took place in 2016, a national integrated measles campaign was conducted for all children aged 6 months to 15 years. Due to sub-optimal immunisation coverage over the years, a significant proportion of this age group remained unprotected which led to ongoing transmission of the virus. Accordingly, a national campaign to cover all children was instituted. HED supported this campaign with posters and banners, as well as a range of other social mobilisation activities.



Scaling up routine immunisation campaign

In order to scale up the demand for routine immunisation, a sensitisation and community engagement campaign took place in 2016. A range of sensitisation activities took place, including:

- 4 regional sensitisation meetings for paramount chiefs, tribal chiefs, and community stakeholders.
- Production and distribution of 10,000 posters on immunisation.
- Production and distribution of 800 flex banners with messages on the immunisation schedule.
- Production and distribution of 20,000 awareness cards
- Organisation of 112 radio discussion programmes (8 programmes per district)

Family planning

Supporting demand generation for family planning is key to improving coverage, and this is therefore a major area of work for HED. Activities in 2016 included:

- Airing 1,080 slots of the existing family planning jingle on local radio stations through a local communications firm.
- Broadcasting 75 episodes of the existing 'Saliwansai' radio drama series nationwide, which included messages on reproductive health, family planning, and teenage pregnancy.
- Conducting 26 radio panel discussions and phone-in programmes across the country. Panellists comprised technical staff from MoHS and key development partners.
- Producing 1 TV trailer / advert and 8 TV episodes on family planning to provide appropriate knowledge on family planning methods and services to raise awareness and dispel myths and misconceptions around family planning contraceptives. This TV series aims to improve sexual and reproductive health in the population.
- Holding 9 communication technical working group meetings, serving as a platform for reviewing BCC tools and plans prior to implementation.
- Participating in the mid-term review meeting on family planning and monitoring visits to assess IEC material availability in PHUs in 7 districts.

Alcohol control

MoHS is in the process of developing a National Alcohol Control Strategy and Action Plan to change the culture of harmful drinking in Sierra Leone. As an immediate action, HED developed an awareness campaign with partners to deliver consistent BCC messages targeting young people, pregnant women, and their families. Activities included:

- Recording and airing of a jingle to prevent early uptake of alcohol in young people, translated into 2 local languages and deployed on 4 provincial radio stations.
- Printing and distributing 4,500 posters with 2 messages during the International Foetal Alcohol Spectrum Disorders Awareness Day commemoration in Freetown.
- Broadcasting 2 radio and 1 TV panel discussion programme on the dangers of alcohol on SLBC FM 99.9, Africa Young Voices (AYV) radio, and SLBC TV.

Tobacco control

Sierra Leone joined countries across the world in commemorating World No Tobacco Day – with this year's theme 'Get Ready for Plain Packaging'. To support this, HED conducted the following activities:

- Broadcast 2 statements from the Honourable Minister of Health and Sanitation and the WHO country representative. These were broadcast over the Sierra Leone Broadcasting Corporation (SLBC) radio and TV.
- Briefing 30 media practitioners from the print and electronic media on World No Tobacco Day. This focused on the status of the Framework Convention on Tobacco Control (FCTC) implementation in Sierra Leone and the role of the media in tobacco control.
- Organising 2 TV and radio discussions and phone-in programmes at SLBC Freetown prior to the commemoration. This focused on the status of tobacco consumption, especially among young people.
- Organising a 1-day community engagement and sensitisation session targeting 200 local council / ward committee and civil society representatives.
- Printing 4 flex banners with World No Tobacco Day campaign messages. These banners were displayed at strategic locations in Freetown.

Health community capacity collaborative

In order to raise the profile of health education in Sierra Leone, HED collaborated with the Johns Hopkins Health Communication Capacity Collaborative (HC3) to undertake the following activities:

- Development of an RMNCH message guide to standardise guidance for IEC / BCC materials in this area. This resulted in over 1,500 copies of the guide being distributed to all 14 DHMTs and district social mobilisation coordinators for distribution to all PHUs; and circulation of soft copies of the guide to the health NGO forum.
- Leadership in strategic health communication training to build the capacity of social mobilisation coordinators with practical training in IEC / BCC interventions. All participants were successfully trained and were awarded certificates in this area.
- Revision and revalidation of the national health promotion strategy, with the validation workshop attended by a broad range of stakeholders working in Sierra Leone across all sectors.
- Conducting the 'Get Kol Art Pik Welbodi' campaign. This aimed to promote and generate demand for higher quality RMNCH services while enabling pregnant women and families with children under 5 to protect their health and practice key behaviours. The campaign focused on the key areas of: attending 4+ ANC visits; delivering at health facilities; rapid care-seeking during pregnancy and for children under 5; and monthly growth monitoring and preventative care in children under 5. This resulted in the delivery of 30,000 posters, 5,000 factsheets, and 5,000 poster flyers delivered to DHMTs and health facilities across Sierra Leone; and 4 radio spots and a 20-episode radio programme being aired on 31 radio stations across the nation.

Emergency hazards

The eradication of Ebola in Sierra Leone would not have been possible without aggressive social mobilisation and engagement of communities during the period of the epidemic, as well as after the epidemic was brought under control. Historically, social mobilisation and community engagement was a neglected part of emergency response, taking a back seat to service provision. This resulted in little attention being paid to addressing risky behaviours, poor habits, and the need for designing interventions and communications cognisant of the existing knowledge, beliefs, and practices prevalent in the community. However, the Ebola epidemic showed the need for social and community mobilisers, and showcased the outstanding role they play.

Following the end of the epidemic, over 850,000 assorted emergency support communication materials were produced and disseminated. A 3-day workshop was held to review and develop relevant materials, attracting a broad range of experts from within MoHS and across key partners. All districts also developed emergency communication and social mobilisation plans specific to locally identified hazards.

Capacity building

HED in collaboration with the WHO held a 3-day capacity building workshop for 28 WHO community engagement officers (CEOs) and 14 MoHS District Social Mobilisation Coordinators (DSMCs) stationed across the 14 districts. This activity was aimed at strengthening inter-district coordination and collaboration to harmonise engagement strategies and promote common understanding of community interventions.

Knowledge management

The need was identified for HED to strengthen its systems for the management and sharing of documents, tools, and information resources relating to health education and health promotion. Accordingly, a knowledge management (KM) assessment was conducted and an activity plan was developed, aligning with the revised national health promotion strategy.

An example of outputs from this process include:

- Sorting of hard and soft copies of key documents by HED for easy access.
- Initiating a web-based knowledge sharing portal on the WHO gateway.
- Capacity building and training of staff on KM throughout the year

Support to training institutions

HED also supported the training of new nurses posted annually as part of their public health experience. In 2016, SRN and SECHN nursing students were sent to HED from the Faculty of Nursing COMAHS as well as SECHNs from 34 Military Nursing School and Redeemers Nursing School in Freetown.

Key challenges in 2016

Despite successfully delivering the planned programme of work in 2016, several challenges were identified during the year. These included:

- Limited financial support for health promotion interventions.
- Lack of vehicles with public address and video systems to intensify community awareness raising at national and district level.
- Inadequately trained staff to implement health promotion activities, especially at district level.
- Inadequate office furniture to accommodate all programme staff.

Looking forwards to 2017

Building on the successes of 2016 and reflecting on the challenges, proposed actions for 2017 relating to strengthening health promotion and health education include:

- Advocating for MoHS and partners to strengthen the logistics capacity, transport, furniture, and equipment of HED in order to be able to promote effective coordination and monitoring of health promotion activities nationwide.
- Advocating for MoHS to upgrade HED to a Directorate in line with the approved National Health Promotion Policy.
- Advocating for MoHS and partners to strengthen the capacity of programme staff, including graphic designers, through training, workshops, and seminars in health promotion in order to improve their effectiveness.

Abbreviations

6mcp	Six-month contact point strategy
A4P	Agenda for Prosperity
ACF	Action Contre Faim
ACT	Artemisinin-based combination therapy
AFR	Adolescent fertility rate
AGD	Accountant General's Department
AIDS	Autoimmune Deficiency Syndrome
ART	Anti-retroviral therapy
ARV	Anti-retrovirals
ANC	Antenatal care
BEmONC	Basic emergency obstetric and neonatal care
BCC	Behaviour change communication
BCG	Bacillus Calmette-Guérin vaccine (against TB)
BPEHS	Basic Package of Essential Health Services
CDC	US Centers for Disease Control
CDD	Community directed distributors
CDI	Community directed intervention
CEmONC	Comprehensive emergency obstetric and neonatal care
CEO	Community engagement officer
CGA	Charlie Goldsmith Associates
CHA	Community health assistant
CHAI	Clinton Health Access Initiative
CHC	Community health centre
CHO	Community health officer
CHW	Community health worker
CLTS	Community-led total sanitation
CPES	Comprehensive Programme for Ebola Survivors
CYP	Couple years of protection
DDPC	Directorate of Disease Prevention and Control
DFID	UK Department of International Development
DFN	Directorate of Food and Nutrition
DHMT	District health management team
DHRH	Directorate of Human Resources for Health
DHS	Demographic and Health Survey
DMO	District medical officer
DOT	Directly observed therapy
DPHC	Directorate of Primary Health Care
DPPI	Directorate of Policy, Planning and Information
DRCH	Directorate of Reproductive and Child Health
DSMC	District social mobilisation coordinators
DTP/DPT	Diphtheria, tetanus and polio vaccine
EHSD	Environmental Health and Sanitation Directorate
EID	Early infant diagnosis
EMTCT	Elimination of mother-to-child transmission of HIV
ENT	Ear, nose and throat
EPI	Expanded programme of immunisation
EPR	Emergency preparedness and response
ERC	Ebola response consortium
ESICOME	Expanded Sanitary Inspection Compliance and Enforcement
ETC	Ebola treatment centre
EVD	Ebola virus disease
FBO	Faith-based organisation

FCTC	Framework Convention on Tobacco Control
FHCI	Free Health Care Initiative
FIT	Facility improvement team
FWC	Freetown WASH Consortium
GAM	Global acute malnutrition
GDP	Gross domestic product
HCT	HIV counselling and treatment
HCW	Health care worker
HDI	Human development index
HED	Health education division
HIS	Health information system
HIV	Human immunodeficiency virus
HKI	Helen Keller International
HMIS	Health management information systems
HRH	Human resources for health
HRIS	Human Resource Information System
HRMO	Human Resource Management Office
HSPR	Health sector performance report
HSRP	Health sector recovery plan
HSSG	Health sector steering group
IDSR	Integrated disease surveillance and response
IEC	Information, education and communication
IHPAU	Integrated Health Project Administration Unit
IHR	International Health Regulations
IMAM	Integrated Management of Acute Malnutrition
IMR	Infant mortality rate
IPC	Infection prevention and control
IPF	Inpatient facility programme
IOM	International Office for Migration
IUD	Intra-uterine device
IWM	Integrated waste management
IYCF	Infant and young child feeding
JIATF	Joint inter-agency task force
JICA	Japan International Cooperation Agency
KAP	Knowledge, attitudes and practices
KPI	Key performance indicator
KSLP	Kings Sierra Leone Partnership
LDC	Least developed country
LF	Lymphatic filariasis
LLIN	Long-lasting insecticidal net
M&E	Monitoring and evaluation
M-IYCF	Maternal and infant and young child feeding
MAM	Moderate acute malnutrition
MCHW	Maternal and child health week
MDA	Mass drug administrations
MDG	Millennium Development Goals
MICS	Multiple indicator cluster survey
MMR	Maternal mortality ratio
MNCAH	Maternal, neonatal, child and adolescent health
MNCH	Maternal, neonatal and child health
MNP	Micronutrient powder
MWR	Ministry of Water Resources
MoFED	Ministry of Finance and Economic Development
MoHS	Ministry of Health and Sanitation
MUAC	Mid-upper arm circumference

NBI	Nest Builders International
NCD	Non-communicable diseases
NERC	National Ebola Response Centre
NGO	Non-governmental organisation
NHA	National Health Accounts
NHSSP	National Health Sector Strategic Plan
NIPCU	National Infection Prevention and Control Unit
NMR	Neonatal mortality rate
NPPU	National pharmaceutical procurement unit
NSAHP	National School and Adolescent Health Programme
NSRTP	National Strategy for the Reduction of Teenage Pregnancy
NTD	Neglected tropical disease
OPV	Oral polio vaccine
ORS	Oral rehydration salts
OTP	Outpatient therapeutic programme
PBF	Performance based financing
PHEMC	Public health emergency management committee
PHU	Peripheral health unit
PFMICP	Public Financial Management Improvement and Consolidation Programme
PMTCT	Prevention of mother-to-child transmission
PNC	Postnatal care
PPASL	Planned Parenthood Association of Sierra Leone
PPE	Personal protective equipment
PRP	President's recovery priorities
RI	Routine immunisation
RMNCAH	Reproductive, maternal, neonatal, child, and adolescent health
RRT	Rapid response team
SAM	Severe acute malnutrition
SDG	Sustainable development goals
SECHN	State-enrolled community health nurse
SIA	Supplementary immunisation activity
SLA	Service level agreement
SLESRC	Sierra Leone Ethics and Scientific Review Committee
SLMS	Sierra Leone Micronutrient Survey
SOP	Standard operating procedure
SRH	Sexual and reproductive health
SRN	State-registered nurse
TB	Tuberculosis
TFR	Total fertility rate
TSFP	Targeted Supplementary Feeding Programme
TWG	Technical working group
U5MR	Under 5 mortality rate
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNCT	United Nations Country Team
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
UNOPS	United Nations Office for Project Services
VSO	Voluntary Service Overseas
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WFP	World Food Programme
YF	Yellow fever