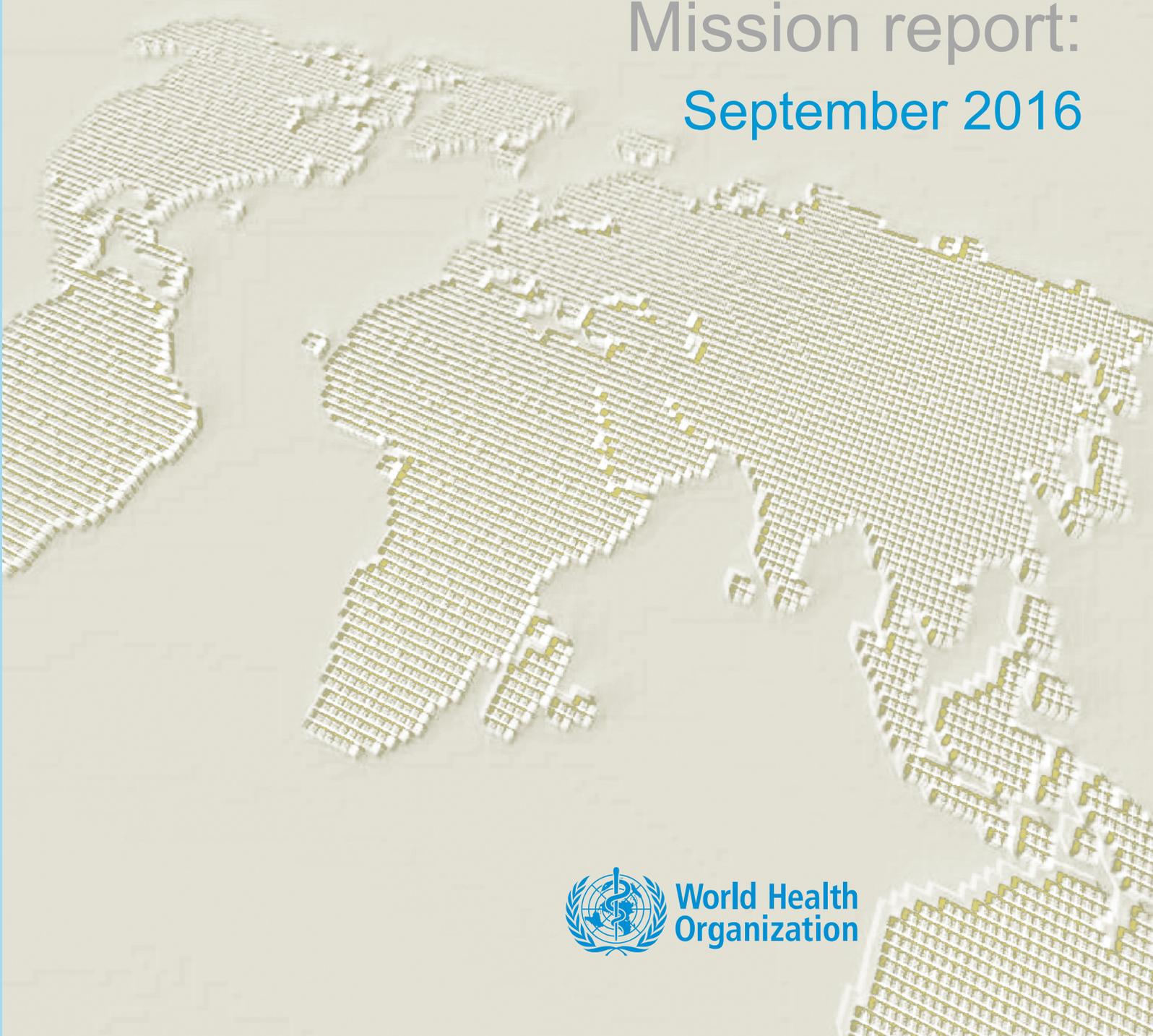


JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of

THE REPUBLIC OF LIBERIA

Mission report:
September 2016



World Health
Organization

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WHO/WHE/CPI/2017.23

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Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

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Design and layout by Jean-Claude Fattier

Printed by the WHO Document Production Services, Geneva, Switzerland

ACKNOWLEDGEMENTS

The WHO Joint External Evaluation Secretariat would like to acknowledge the following, whose support and commitment to the principles of the International Health Regulations (2005) have ensured a successful outcome to this JEE mission:

- The Government and national experts of Liberia for their support of, and work in, preparing for the JEE mission.
- The governments of Eritrea, Sierra Leone, South Africa and the United States, for providing technical experts for the peer review process.
- The Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE), International Organization for Migration (IOM), UNICEF and the World Bank for their contribution of experts and expertise.
- The governments of Germany and Finland for their financial support to this mission.
- The following WHO entities: WHO Country Office, Regional Office and Headquarters.
- Global Health Security Agenda for their collaboration and support.

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Abbreviations

AFENET	Africa Field Epidemiology Network
AMR	Antimicrobial resistance
BIN	Bureau of Immigration and Naturalization
CBRN	Chemical, biological, radiological and nuclear
CDC	United States Centers for Disease Control and Prevention
CEBS	Community event-based surveillance
EET	External Evaluation Team
EPI	Expanded Programme on Immunization
EPR	Epidemic preparedness and response
EVD	Ebola virus disease
FAO	United Nations Food and Agriculture Organization
FELTP	Field Epidemiology and Laboratory Training Programmes
FETP	Field Epidemiology Training Programme
GHSA	Global Health Security Agenda
HCAI	Health-care associated infection
IDSR	Integrated Disease Surveillance and Response system
IHR (2005)	International Health Regulations (2005)
IOM	International Organization for Migration
IPC	Infection control and prevention
IRC	International Rescue Committee
JEE	Joint Evaluation Exercise
LIBR	Liberian Institute for Biomedical Research
LMHRA	Liberia Medicines and Health Products Regulatory Authority
MCM	Medical countermeasure
MoU	Memorandum of Understanding
NPHRL	National Public Health Reference Laboratory
OIE	World Organisation for Animal Health
PACS	Partnerships for Advancing Community-Based Services
PHEIC	Public health emergency of international concern
POE	Point(s) of Entry
PVS	Performance of Veterinary Services
SOP	Standard operating procedure
SQS	Safety quality systems
TOR	Terms of reference
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WAHIS	OIE World Animal Health Information System

Executive summary – findings from the Joint External Evaluation

Since June 2007, countries are strengthening the core capacities required for the implementation of the International Health Regulations (IHR (2005)). Under article 54 of the IHR (2005), countries were self-reporting annually their implementation status to World Health Assembly. IHR review committees and various expert panels recommended the review of events, and voluntary independent external evaluation. As a result of IHR review committees and recommendations, the World Health Organization (WHO) and partners developed the Joint External Evaluation (JEE) based on available tools such as the IHR monitoring questionnaire, the Global Health Security Agenda (GHS) assessment and others.

This assessment was a WHO-led IHR (2005) core capacity assessment using the IHR JEE tool. An international, multisectoral team of experts (nominated by the JEE Secretariat) and observers from Eritrea and South Africa participated in the week-long assessment which took place from 5 to 9 September 2016, in Monrovia Liberia. In the WHO African Region, Liberia is the fourth country to volunteer for the JEE, after the United Republic of Tanzania, Ethiopia and Mozambique. Importantly, Liberia is the first country in West Africa to undergo the JEE and also the first country where the WHO Regional Office for Africa was the sole organizer of the JEE and also the team lead.

All the 19 technical areas of the JEE tool were assessed. Liberia first completed a self-assessment using the JEE tool. The results of this assessment, including self-assessed scores for the 19 technical areas, were then presented to the External Evaluation Team (EET). The EET and host country experts participated in a facilitated discussion to jointly assess Liberia's current strengths, areas which need strengthening and priority actions; scores were developed through a process of consensus. Technical area scores, supporting information and specific recommendations for priority actions are provided under the technical area sections of this report.

The results of the assessment and observations of the host country's health security preparedness were presented to Minister of Health (Hon. Dr Bernice T. Dahn), the Senator on the health committee in the Senate and former Minister of Health (Hon. Dr Peter Coleman), senior Government officials from the Ministry of Health and several other ministries and Government departments, representatives from donor and technical partner agencies, county health officials, and the media.

Overarching issues and priority actions

Key best practices

- There is strong political will to develop IHR capacities by taking forward a multisectoral health systems approach.
- There are strong partnerships and stakeholder involvement at subnational, national, regional and global levels.
- The country has made significant progress post-Ebola in all domains of human and public health.
- There is a robust surveillance system with countrywide coverage in the human health sector.
- The foundation for the Field Epidemiology Training Programme (FETP) has been set in collaboration with Emory University (Atlanta, GA, United States of America) and the Africa Field Epidemiology Network (AFENET).
- Robust emergency operations centres (EOCs) and incident management systems (IMS) have been established at national and intermediate levels.

- The country has a good vaccine delivery system in the human health sector to deliver mass vaccinations if necessary.
- Experiences of linking public health and security authorities in Liberia are commendable.
- There is robust experience of deployment of medical countermeasures and personnel and a strong foundation for infection prevention and control (IPC) practices in health facilities through the safety quality systems (SQS) training programme.

Key areas for improvement

- Liberia is urged to revise laws and legislation in the context of IHR and One Health, for example the 1976 Public Health Act.
- Key policies and strategies still in draft form should be quickly finalized in collaboration with relevant national stakeholders.
- In the context of One Health, the animal health sector needs additional efforts and interventions.
- Liberia's IHR focal point and the World Organisation for Animal Health (OIE) focal point (who is still an individual rather than an organizational set-up or centre) should be organized as a centre and provided with necessary resources (information and communication technology, human, logistical and financial resources) to facilitate their function of reporting to WHO and/or OIE and to be accessible 24 hours a day, seven days a week.
- Liberia should develop a multihazard national public health emergency preparedness and response plan, which should be integrated with the points of entry (POE) emergency plans. IHR-compliant air and sea plans should also come under this plan. In addition, cross-border collaboration/initiatives should be addressed during the development of the multihazard national public health emergency preparedness and response plan.
- It will be important to strengthen laboratory capacity and networks, including supply chain systems, and to establish internal quality control and external quality assurance systems.
- Antimicrobial resistance detection, mitigation and stewardship strategies and plans are urgently needed and should be addressed using a One Health approach, with close collaboration of all the relevant sectors including agriculture and the Forestry Development Agency.
- Liberia should establish strategies for food safety.
- Last but not least, a budget line should be created for IHR and funding allocated for IHR core capacity building from domestic and international sources.

Republic of Liberia scores

Capacities	Indicators	Score
National legislation, policy and financing	P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005)	2
	P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with IHR (2005)	2
IHR coordination, communication and advocacy	P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR	3
Antimicrobial resistance	P.3.1 Antimicrobial resistance (AMR) detection	1
	P.3.2 Surveillance of infections caused by AMR pathogens	1
	P.3.3 Health-care-associated infection (HCAI) prevention and control programmes	2
	P.3.4 Antimicrobial stewardship activities	1
Zoonotic diseases	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	2
	P.4.2 Veterinary or animal health workforce	2
	P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional	2
Food safety	P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases	1
Biosafety and Biosecurity	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	2
	P.6.2 Biosafety and biosecurity training and practices	2
Immunization	P.7.1 Vaccine coverage (measles) as part of national programme	3
	P.7.2 National vaccine access and delivery	4
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	2
	D.1.2 Specimen referral and transport system	3
	D.1.3 Effective modern point-of-care and laboratory-based diagnostics	2
	D.1.4 Laboratory quality system	1
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	4
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	2
	D.2.3 Analysis of surveillance data	4
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to WHO, FAO and OIE	2
	D.3.2 Reporting network and protocols in country	2
Workforce development	D.4.1 Human resources available to implement IHR core capacity requirements	1
	D.4.2 FETP ¹ or other applied epidemiology training programme in place	3
	D.4.3 Workforce strategy	2
Preparedness	R.1.1 National multi-hazard public health emergency preparedness and response plan is developed and implemented	1
	R.1.2 Priority public health risks and resources are mapped and utilized.	2

Capacities	Indicators	Score
Emergency response operations	R.2.1 Capacity to activate emergency operations	3
	R.2.2 EOC operating procedures and plans	4
	R.2.3 Emergency operations programme	4
	R.2.4 Case-management procedures are implemented for IHR-relevant hazards.	2
Linking public health and security authorities	R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event	4
Medical countermeasures and personnel deployment	R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency	4
	R.4.2 System is in place for sending and receiving health personnel during a public health emergency	4
Risk communication	R.5.1 Risk communication systems (plans, mechanisms, etc.)	3
	R.5.2 Internal and partner communication and coordination	4
	R.5.3 Public communication	4
	R.5.4 Communication engagement with affected communities	2
	R.5.5 Dynamic listening and rumour management	3
Points of entry	POE.1 Routine capacities are established at points of entry	2
	POE.2 Effective public health response at points of entry	1
Chemical events	CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies	1
	CE.2 Enabling environment is in place for management of chemical events	1
Radiation emergencies	RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies	1
	RE.2 Enabling environment is in place for management of radiation emergencies	1

Note on scoring of technical areas of the JEE tool

The Joint External Evaluation process is a peer-to-peer review. As such, it is a collaborative effort between host country experts and External Evaluation Team members. In completing the self-evaluation, the first step in the JEE process, and as part of preparing for an external evaluation, host countries are asked to focus on providing information on their capabilities based on the indicators and technical questions included in the JEE tool.

The host country may score their self-evaluation or propose a score during the on-site consultation with the external team. The entire external evaluation, including the discussions around the scores, strengths/best practices, the areas which need strengthening/challenges and the priority actions is done in a collaborative manner, with external evaluation team members and host country experts seeking agreement.

Should there be significant and irreconcilable disagreement between the external team members and the host country experts or among the external or among the host country experts, the External Evaluation Team Lead will decide on the final score and this will be noted in the Final Report, along with the justification for each party's position.

PREVENT

National legislation, policy and financing

Introduction

The International Health Regulations (IHR) (2005) provide obligations and rights for States Parties. In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even if a new or revised legislation may not be specifically required, states may still choose to revise some regulations or other instruments in order to facilitate IHR implementation and maintenance in a more effective manner. Implementing legislation could serve to institutionalize and strengthen the role of IHR (2005) and operations within the State Party. It can also facilitate coordination among the different entities involved in their implementation. See detailed guidance on IHR (2005) implementation in national legislation at http://www.who.int/ihr/legal_issues/legislation/en/index.html. In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.

Target

Adequate legal framework for States Parties to support and enable the implementation of all their obligations, and rights to comply with and implement the IHR (2005). New or modified legislation in some States Parties for implementation of the IHR (2005). Where new or revised legislation may not be specifically required under the State Party's legal system, States may revise some legislation, regulations or other instruments in order to facilitate their implementation and maintenance in a more efficient, effective or beneficial manner. States Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanism.

Republic of Liberia level of capabilities

There is a legal framework to support and enable the implementation of the IHR (2005). However, Liberia has depended on the Public Health Law enacted in 1976: this Law and associated legislation and policies are being revised. There are inadequate human resources to implement legislation and policies: for example, there is a shortage of veterinarians and epidemiologists. Moreover, financial resources are insufficient to implement legislation and policies so there is a need to create a budget line and allocate resources for IHR in the national budget.

Recommendations for Priority Actions

- Revise the 1976 Public Health Law to incorporate the IHR requirements to enable enforcement of the Public Health Law and other IHR-related legal instruments.
- Build capacity for IHR (2005) core competencies and enhance intersectoral collaboration.
- Raise awareness among all relevant stakeholders about their roles and responsibilities related to the IHR (2005).
- Create a budget line and allocate financial resources to support implementation.

Indicators and Scores

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005) – Score 2

Strengths/best practices

- The availability of legislation such as the Public Health Law and the Environmental Protection Law is a key strength in ensuring that the IHR (2005) core capacities are built up and sustained, although some legislation require revision.
- The Public Health Law is currently being revised to address emerging issues. There is a very strong political and partner commitment to revising and implementing public health laws, as demonstrated by Hon. Dr Peter Coleman (Chairperson of the Senate Committee on Health) who promised that Committee members, as legislators, “are available and ready to ensure the alignment of the laws with the requirements of IHR”.
- There is clear evidence of intersectoral collaboration and coordination to implement legislation in the country. Ensuring the availability of staff, especially at the national level, will ensure alignment of the domestic legislation and policies with the IHR (2005).
- There are efforts to adopt and scale up the “One Health” approach and to ensure that public health laws will increase relevant capacity for both animal and human health.

Areas which need strengthening and challenges

- The existing 1976 Public Health Law needs to be revised to incorporate all the IHR (2005) requirements.
- The framework for intersectoral collaboration and partnership needs to be clearly defined, since it is key to IHR (2005) implementation.
- The Government of Liberia needs to continue Capacity-building at all levels.
- The limited financial and human resources to implement legislation at all levels should be addressed.
- Making One Health a national policy will increase Government financial input, strengthen and speed up IHR implementation in all sectors of Liberian society and increase collaboration between all stakeholders in the country.

P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR (2005) – Score 2

Strengths/best practices

- The Government of Liberia has developed or adapted or laws and policies related to aspects of the IHR core capacities.

Areas which need strengthening and challenges

- There is a need to mobilize financial and human resources.
- Capacity-building needs to be strengthened at all levels.
- Public education and awareness-raising activities are needed.
- One Health is a good platform for mobilizing resources locally and internationally to build core capacities in all fields.

IHR coordination, communication and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for efficient and alert response systems. Coordination of nationwide resources, including the designation of a national IHR focal point, which is a national centre for IHR communications, is a key requisite for IHR implementation.

Target

Multisectoral/multidisciplinary approaches through national partnerships that allow efficient, alert and responsive systems for effective implementation of the IHR (2005). Coordinate nationwide resources, including sustainable functioning of a national IHR focal point – a national centre for IHR (2005) communications which is a key requisite for IHR (2005) implementation – that is accessible at all times. States Parties provide WHO with contact details of national IHR focal points, continuously update and annually confirm them.

Republic of Liberia level of capabilities

Prior to the outbreak of Ebola virus disease (EVD), the strategy to enhance partner coordination included: information systems strengthening; common annual planning; standard guidelines, norms and evaluation. Partner coordination mechanisms included: the Health Sector Coordination Committee, the National Disaster and Relief Commission, the Health Sector Coordinating Committee and numerous technical committees. In addition, there were special mechanisms including the Global Fund to Fight AIDS, Tuberculosis and Malaria, the Liberia Health Sector Pool Fund, the World Bank, the Fixed Amount Reimbursement Agreement, joint planning and annual reviews.

During the EVD outbreak, a national EVD Task Force was set up, that became the Presidential Advisory Committee on Ebola. Also set up were the Incident Management System and its thematic/technical working groups, the county EVD task forces chaired by superintendents, the county technical committees/incident management systems chaired by the County Health Officer, the district EVD task forces and the community EVD task forces.

Since the EVD outbreak, the following coordination mechanisms have been institutionalized: The National Task Force under the Office of the President; the Health Sector Coordination Committee; the Incident Management System; the One Health Coordination Committee; the National Surveillance Technical Coordination Committee; the County Disaster Task Force chaired by the Superintendent; the County Surveillance Technical Coordination Committee; district disaster task forces; community disaster task forces. Key stakeholders have been identified and their roles and responsibilities defined. They include the Office of the President for policy, coordination, advocacy and resource mobilization; the Ministry of Finance and Development Planning for resource mobilization; the Ministry of Internal Affairs for local leadership and community engagement during disaster; the Ministry of Health for planning, coordination, monitoring and evaluation; the Ministry of Agriculture for zoonotic vaccine-preventable-disease control; partners for technical and financial support, capacity-building and monitoring and evaluation; and the community for mobilization and demand generation.

Recommendations for Priority Actions

- Strengthen and sustain a multisectoral and multidisciplinary coordination and communication mechanism with animal health, wildlife, environment and other relevant sectors, including establishing memoranda of understanding (MoU) for joint actions and training with relevant stakeholders, such as

security agencies and the Ministry of National Defence. In addition establish a focal point for veterinary public health within the Ministry of Health to drive the One Health efforts.

- Revise the terms of reference (TOR) for the national IHR centre within the Ministry of Health and Ministry of Agriculture to make them more responsive and accountable to all relevant sectors.
- Increase advocacy, awareness-raising among the local population on the importance of IHR, promote multidisciplinary and multi-stakeholder participation in the context of the One Health approach and ensure that the IHR centres have the necessary capacity and logistics (office, transport, information and communication) to make them more functional.
- Strengthen cross-border coordination, communication and advocacy with all neighbouring countries and other countries in the western African region.
- Establish a single information platform and regularly produce and disseminate information products (dashboards, bulletins, daily alert, weekly/monthly/quarterly/annual updates) and share them promptly with all stakeholders.
- Conduct annual IHR review meetings and facilitate a regional review. In addition, conduct quarterly multisectoral meetings in each county.

Indicators and Scores

P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR – Score 3

Strengths/best practices

- There is very high political commitment, as shown by the creation of a high-level coordination mechanism under the leadership of the President – the Presidential Advisory Committee on Ebola.
- There are efforts to formulate a One Health strategy, and a national One Health Committee has been established.
- A National Disaster Relief Commission has been established under the Ministry of Internal Affairs.
- There is a National Disease Surveillance Technical Coordination Committee within the Ministry of Health with technical working groups (Community Event-Based Surveillance (CEBS), Border Coordination Group, epidemic preparedness and response (EPR), etc.)
- Emergency operations centres established at central level and in all the 15 counties and incidence management systems established at national and county levels.
- Coordination roles and responsibilities have been defined for the relevant stakeholders.

Areas which need strengthening and challenges

- There are major challenges with coordination with the Ministry of Agriculture and veterinary services.
- There are no SOPs to streamline coordination mechanisms, yet there are numerous committees and task forces.
- There is limited information management and sharing with other sectors: veterinary services, port health authorities, abattoirs and slaughterhouses, defence and environmental health. A single information platform should be set up.
- Sustained funding for coordination, multidisciplinary and multisectoral engagement is required, along with capacity-building for coordination at national and county levels; increased advocacy with all stakeholders including line ministries, the private sector, faith-based institutions, partners and the community; proactive involvement of all stakeholders (multidisciplinary and multisectoral); and support for communication to facilitate information management.
- There is a need for sustained funding for coordination, information management and advocacy for One Health through development of a One Health strategy.

Antimicrobial resistance

Introduction

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. Antimicrobial resistance is evolving at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.

Target

Support work coordinated by FAO, OIE and WHO to develop an integrated global package of activities to combat antimicrobial resistance, spanning human, animal, agricultural, food and environmental aspects (i.e. a One Health approach). Each country has: (i) its own national comprehensive plan to combat antimicrobial resistance; (ii) strengthened surveillance and laboratory capacity at the national and international levels following international standards developed as per the framework of the Global Action Plan; and (iii) improved conservation of existing treatments and collaboration to support the sustainable development of new antibiotics, alternative treatments, preventive measures and rapid point-of-care diagnostics, including systems to preserve new antibiotics.

Republic of Liberia level of capabilities

The country has not developed any capabilities to address AMR. There is no planned activity to develop a national action plan to combat AMR, and there is inadequate knowledge about the Global Action Plan on AMR. There are no AMR detection, surveillance and stewardship programmes in place. Liberia has a national IPC programme that covers aspects of the HCAI control programme, but the country does not have a stipulated HCAI control programme. A national programme on health care associated infection prevention and control was launched after the Ebola outbreak and has been established in all health-care settings. There is a draft Laboratory Strategic Plan 2016–2021, but it does not include AMR testing or surveillance. The National Drug Formulary, National Drug Policy, National Therapeutic Guidelines for Liberia and the national IPC plan and guidelines need to be reviewed and updated to reflect the current situation of the country.

Recommendations for Priority Actions

- Establish a national committee to address the Global Action Plan on AMR, involving the different sectors (human, animal, agriculture, environment, scientific and research community, public and civil society) to develop the Liberian national action plan on AMR using a One Health approach.
- Develop a national AMR surveillance system based on the existing laboratory capacity in health-care settings and hospitals supported by a national reference laboratory and a national surveillance system in the animal and agriculture sectors.
- Strengthen implementation of HCAI prevention and control programme in health-care settings, including surveillance of HCAI and the core components of the HCAI programmes.
- Formulate clear policies and guidelines for antimicrobial stewardship.

Indicators and Scores

P.3.1 Antimicrobial resistance (AMR) detection – Score 1

Strengths/best practices

- Address regular AMR testing and laboratory AMR detection and surveillance in the laboratory strategic plan.

Areas which need strengthening and challenges

- Conduct a needs assessment in all laboratories to identify the main gaps to support the identification of AMR pathogens.
- Improve laboratory capacity at national level through the establishment of a laboratory network with an apex national reference laboratory to establish and maintain standards.
- Conduct risk assessments for both human and animal pathogens and establish a database of all the antimicrobials used in the country.
- Establish a national action plan for AMR in a One Health context.

P.3.2 Surveillance of infections caused by AMR pathogens – Score 1

Strengths/best practices

- The draft five-year laboratory strategic plan will be updated to address regular AMR testing, detection and surveillance.
- The country has the National Therapeutics Guidelines for Liberia and Essential Medicines List to guide the use of the most common drugs and medicines.
- A drug policy and a law on the Liberia Medicines and Health Products Regulatory Authority (LMHRA) have been formulated to guide and reinforce the rational use of medicines.

Areas which need strengthening and challenges

- Establish a surveillance system for infections caused by AMR pathogens, including designation of selected sentinel sites as part of the national action plan on AMR.
- Review and update the National Drug Policy of 2001.

P.3.3 Health-care-associated infection (HCAI) prevention and control programmes – Score 2

Strengths/best practices

- There is a draft national IPC plan and guidelines.
- Front-line health workers have been trained in IPC practices.
- IPC guidelines and material have been distributed to health facilities which have designated IPC focal points.

Areas which need strengthening and challenges

- Implementation of the HCAI guidelines at national level, including regular training, monitoring and evaluation.

P.3.4 Antimicrobial stewardship activities - Score 1

Strengths/ best practices

- Establishment of a prescription-based access to antimicrobials in the Agriculture sector.

- There exist some documents for AMR stewardship such as: IDSR guidelines 2016, Therapeutic guidelines 2015.
- Administration of drugs is based on prescription by qualified personnel in Agriculture sector.

Areas which need strengthening and challenges

- Establish a robust AMR stewardship programme for the country.

Zoonotic diseases

Introduction

Zoonotic diseases are communicable diseases that can spread between animals and humans. These diseases are caused by viruses, bacteria, parasites and fungi carried by animals, insects or inanimate vectors that aid in its transmission. Approximately 75% of recently emerging infectious diseases affecting humans is of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Adopted measured behaviors, policies and/or practices that minimize the transmission of zoonotic diseases from animals into human populations.

Republic of Liberia level of capabilities

Liberia's zoonotic disease detection and response capabilities were tested during the EVD outbreak in 2014/2015 and three subsequent flare-ups in 2015–2016. Liberia implements a CEBS programme, including community triggers for animal-health events, that notifies and engages the community and health sectors.

In addition, the Government has worked to improve communication about zoonotic diseases by designating a representative from various sectors, including the Ministry of Health, Ministry of Agriculture, Forestry Development Authority and Environmental Protection Agency, to attend One Health Coordination Committee meetings.

Recommendations for Priority Actions

- Identify priority zoonotic diseases of domestic animals and wildlife in the community.
- Educate and raise awareness in communities about zoonotic disease control, good animal husbandry practices and animal welfare.
- Prioritize resources in order to ensure the reduction of potential spill over of zoonotic diseases into the human population.
- Enhance veterinary services and increase research into livestock diseases.
- Develop the initial and continuous training of veterinary personnel.
- Finalize draft legislation: agriculture law and proposed animal disease law.
- Develop a multisectoral approach to zoonotic diseases at the national, county and local levels.

Indicators and Scores

P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens – Score 2

Strengths/best practices

- The Government has established relationships with committed potential implementing partners, including the USAID Emerging Pandemic Threats programme phase 2, consisting of the FAO component, the PREDICT project and preparedness and response; and with nongovernmental organizations to strengthen veterinary services, including zoonotic disease surveillance, diagnostic capacity and improvement of the veterinary laboratory infrastructure.

- Standard operating procedures have been developed for field sampling for zoonotic diseases. Some surveillance has been initiated and additional field training will be conducted.

Areas which need strengthening and challenges

- There is currently no formal link (in terms of information sharing) between the animal health and human public health sectors.
- Current surveillance for animal bites (suspected rabies) under IDSR has established a “link” between human and animal health through collaboration between the MOH and the MOA. However the practice of information sharing is inconsistent, non-systematic or inadequate.
- There is a need to strengthen screening of livestock at border crossing points and inspection at points of entry, where testing can be performed on animals quarantined, as necessary.

P.4.2 Veterinary or Animal Health Workforce – Score 2

Strengths/best practices

- The Government has identified the need for additional veterinary and animal health workers and has assigned livestock officers to each of the 15 counties.

Areas which need strengthening and challenges

- Liberia currently does not have a field network or established procedures to conduct fully functional zoonotic disease surveillance because of inadequate staffing and technical capacity.
- Workforce development should include the resources to train and compensate personnel, including veterinarians, animal scientists and laboratory technicians, in order to provide a robust animal health infrastructure within the country. The current educational system in Liberia does not include the option of a veterinary degree.
- Capacity among human resources in good agricultural practices and empowerment of farmers in food security and healthy production of food of animal origin, including zoonotic disease control, would reduce the risk of transmission of zoonotic diseases.
- Establishment of public health and food safety sections under the Livestock Department at the Ministry of Agriculture would also limit the risk of zoonotic diseases.

P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional – Score 2

Strengths/best practices

- The animal health and wildlife sectors have led animal surveillance and performed research in domestic animals and wildlife.

Areas which need strengthening and challenges

- Capacity-building in field veterinary service and disease surveillance is critical for an adequate response.
- There is a need to restore the veterinary laboratory to full functionality in order to respond to potential zoonotic disease events.
- It would be beneficial to have a designated IHR focal point at the Ministry of Agriculture.

Food safety

Introduction

Food- and water-borne diarrhoeal diseases are leading causes of illness and death, particularly in less developed countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. The identification of the source of an outbreak and its containment is critical for control. Risk management capacity with regard to control throughout the food chain continuum must be developed. If epidemiological analysis identifies food as the source of an event, based on a risk assessment, suitable risk management options that ensure the prevention of human cases (or further cases) need to be put in place.

Target

Surveillance and response capacity among States Parties for food- and water-borne disease risks or events by strengthening effective communication and collaboration among the sectors responsible for food safety, and safe water and sanitation.

Republic of Liberia level of capabilities

The Liberian authorities state that food safety monitoring is ongoing, although it is not well coordinated in a structured, integrated surveillance system. Currently, the Ministry of Health issues only food safety permits, not food safety certificates, to food establishments. Liberian authorities have noted that there are ongoing efforts among the Mano River Union countries to strengthen inspection and quarantine measures for the cross-border live food animal trade to control animal diseases of economic and public health importance. There are sector guidelines for food safety standards within the Ministry of Agriculture and Ministry of Health. However, there is no established surveillance system for foodborne diseases to assist in implementing these standards.

Recommendations for Priority Actions

In view of Liberia's current lack of capabilities for detecting and responding to foodborne disease and food contamination, it is recommended that the following priority areas should be addressed.

- Establish a comprehensive foodborne disease surveillance system.
- Build and sustain the capacity in human resource, logistics, infrastructure and technical support at all levels, including laboratories, to promote the enforcement of the 1976 Public Health Law.
- Strengthen intersectoral collaboration according to institutional mandates to implement the 1976 Public Health Law.

Indicators and Scores

P.5.1 Mechanisms are established and functioning for detecting and responding to foodborne disease and food contamination – Score 1

Strengths/best practices

- Liberia has national food safety guidelines, although they are not enforced.
- The country is a member of the International Food Safety Network (INFOSAN), the Codex Alimentarius Commission and the West African Trade Organization.

- A National Standards Laboratory has been established with limited but increasing capability. It's currently involved in the testing of the various bottled water brands and a number of locally available food items circulating in Liberian markets.
- There are focal persons in relevant government ministries but there is limited coordination or communication among them.
- Despite the constraints that Liberia faces, the authorities have been able to conduct periodic inspection of food establishments and to issue permits and clearances before opening food establishments.

Areas which need strengthening and challenges

- Liberia requires capacity-building in human resources, logistics, infrastructure and technical expertise.
- The newly established National Standards Laboratory has limited capacity for microbiology and focuses only on detection.
- The Laboratory is in the process of achieving compliance with International Organization for Standardization rules, so it cannot currently assist other national laboratories to develop quality systems.
- It is apparent that there is limited intersectoral collaboration in enforcing the 1976 Public Health Law.
- There are clear roles and responsibilities among stakeholders, but limited coordination.
- Lastly, Liberia shares its borders with other developing countries, but these borders have been observed to be porous due to poor border controls. As a result, there is unrestricted informal cross-border trade in live food animals and other commodities.

Biosafety and biosecurity

Introduction

It is vital to work with pathogens in the laboratory to ensure that the global community possesses a robust set of tools – such as drugs, diagnostics, and vaccines – to counter the ever-evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize and respond to outbreaks of infectious diseases of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents have raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants or the environment.

Target

A whole-of-government national biosafety and biosecurity system with especially dangerous pathogens identified, held, secured and monitored in a minimal number of facilities according to best practices; biological risk management training and educational outreach conducted to promote a shared culture of responsibility, reduce dual-use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents; and country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures in place as appropriate.

Republic of Liberia level of capabilities

Liberia is working to improve biosafety and biosecurity following the EVD outbreak. Issues were identified during the outbreak, relating to laboratory capacity, infection control, personal protective equipment and biosafety and biosecurity training. Liberia is working with international partners to improve many areas of biosafety and biosecurity.

Currently, there are a number of draft regulatory documents relating to biosafety and biosecurity which need to be finalized. In addition, there is considerable goodwill among several stakeholders who are keen to shape the regulatory environment in the future, including: laboratory authorities, animal health personnel, border security and the Liberian National Police. Most of these stakeholders were actively involved in the response to the EVD outbreak.

The Environmental Protection Agency provides overall legislation and regulations for compliance with biosafety and biosecurity. Although a draft national environmental health policy exists, it is not comprehensive and needs to be updated. In addition, there are no national biosecurity or biosafety legislation, regulations or frameworks and no official biosafety or biosecurity monitoring.

However, partners have supported training for number of staff from the Ministry of Agriculture, the Ministry of Commerce and Industry, the Ministry of Health, the Ministry of Justice, the Liberian National Police, the Bureau of Immigration and Naturalization (BIN)¹ and the Armed Forces of Liberia. This has contributed to the current strengths of the country's biosafety and biosecurity capabilities. Further, Liberia has existing documentation – although much of it is in draft form – including the National Environmental and Occupational Health Policy (2010), the five-year Laboratory Strategic Plan (2016), the National Laboratory

¹ Editor's Note: now the Liberia Immigration Service.

Policy (2011), the Biosafety Manual (2012) and the National Infection Protection and Control Guidelines (2016). Furthermore, there exists a catalogue of the specimens collected during the 2014/2015 Ebola outbreak in the country, and storage of infectious specimens is consolidated at the National Reference Laboratory, although there is limited screening for biological weapons at points of entry.

As with most technical areas of this report, the major challenge for implementing measures for biosecurity and biosafety is the limited funding from the Government and the dependence on partners for the funding of biosecurity and biosafety activities. There also exists a lack of an explicit national policy addressing biosafety and biosecurity: the latest available document, generated in 2012, was never finalized and was largely focused on the laboratory. Other guidelines for biosecurity and biosafety were drawn up with the assistance of the World Bank in 2009 to supplement the Environmental Protection Agency regulations, but these are in draft form and are not currently implemented. To date, there remains no biosafety-level-3 laboratory in the country, although this is recommended for the handling of highly infectious pathogens.

As a result of the Ebola outbreak of 2014/2015, there has been investment in the development of medical waste management facilities at hospital level, IPC standard operating procedures, a safe and quality services strategy, and safe specimen handling and transportation practices have been strengthened. From the laboratory perspective, there has been a move towards molecular methods of testing, such as polymerase chain reaction and serology, to limit the need to culture dangerous pathogens.

Although training in biosecurity and biosafety is conducted, it is partner-driven and there is no official training programme or plan. Consequently, the training is not well coordinated and often excludes relevant sectors. There is also a lack of risk assessments or safety audit plans for biohazard procedures in all sectors, and no framework exists to document, report, investigate or address incidents and accidents related to biological hazards. In addition, there are limited occupational health services, including provision of immunization against pathogens that staff may encounter.

There is a need for integration of biosafety and biosecurity training for all relevant stakeholders. Liberia needs to develop and implement occupational health and safety and vaccination policies. Furthermore, there is a need for monitoring through coordinated biosafety and biosecurity surveillance and implementation of a solid management plan. This can be achieved through a comprehensive national policy on biosafety and biosecurity; designation of focal points in all relevant sectors, with well-defined roles and responsibilities; a clear monitoring plan for regular safety audits of facilities and institutions dealing in biological hazards; and regular risk assessment of processes and procedures.

Recommendations for Priority Actions

To address the challenges Liberia faces in biosafety and biosecurity, it is recommended that the country works towards addressing the following priority areas.

- Develop and implement a comprehensive national policy on biosafety and biosecurity that includes all relevant sectors.
- Establish linkages between the human, animal and environmental health sectors to address biosafety/biosecurity concerns in line with the One Health approach, build capacity and implement strategic action.

Indicators and Scores

P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal, and agriculture facilities – Score 2

Following the country presentation and subsequent discussions with input from relevant sectors, there was a consensus that Liberia's self-assessment of biosafety and biosecurity had been lower than was justified. It was agreed that, since evidence had been provided that other sectors of government had conducted

training in biosafety and biosecurity, all that was required was an intergovernmental body to coordinate biosecurity and biosafety issues regularly among the relevant stakeholders. As a result it was agreed that Liberia has some (limited) capacity for biosafety and biosecurity and that the score should be increased from 1 to 2. The JEE team site visit to three of Liberia's national laboratories confirmed the limited capacity for biosafety and biosecurity at all of the selected laboratories. Infrastructure development was viewed as a challenge, including equipment, water and electricity supply.

Strengths/best practices

- Partners have supported training for several staff from the Ministry of Agriculture, the Ministry of Commerce and Industry, the Ministry of Health, the Ministry of Justice, the Liberian National Police, the Bureau of Immigration and Naturalization and the Armed Forces of Liberia. This has contributed to the current strengths of Liberia's biosafety and biosecurity capabilities.
- Liberia has existing documentation – although many are in draft form as noted above.
- As a result of the Ebola outbreak of 2014/2015, there has been investment in the development of medical waste management facilities at hospital level, IPC standard operating procedures, a safe and quality services strategy and safe specimen handling and transportation practices.
- From the laboratory perspective, there has been a move towards molecular methods of testing and serology to limit the need to culture dangerous pathogens, but these require further investment, development and accreditation.

Areas which need strengthening and challenges

- The limited funding from the Government and the dependence on partners for the funding of biosecurity and biosafety activities remain a challenge.
- There is no explicit national policy addressing biosafety and biosecurity, as the latest available document was generated in 2012 and was never finalized.
- To date, there is still no biosafety-level-3 laboratory in the country, although this is recommended for the handling of highly infectious pathogens.
- There is a need for monitoring through coordinated biosafety and biosecurity surveillance and implementation of a solid management plan. This can be achieved through a comprehensive national policy on biosafety and biosecurity; designation of focal persons in all sectors, with well-defined roles and responsibilities; a monitoring plan for regular safety audits of facilities and institutions dealing in biological hazards; and regular risk assessment of processes and procedures.
- It is important to identify the locations of high-risk pathogens and to secure them in a minimum number of facilities.

P.6.2 Biosafety and biosecurity training and practices – Score 2

Strengths/best practices

- Partner organizations have provided training for a growing number of individuals from the Ministry of Agriculture, the Ministry of Commerce and Industry, the Ministry of Health, the Ministry of Justice, the Liberian National Police, the Bureau of Immigration and Naturalization and the Armed Forces of Liberia.

Areas which need strengthening and challenges

- Although training in biosecurity and biosafety is conducted, it is partner-driven and there is no official training programme or plan. Consequently, the training is not well coordinated and often excludes relevant sectors.
- There is a lack of risk assessments or safety audit plans for biohazard procedures in all sectors, and

no framework exists to document, report, investigate or address incidents and accidents related to biological hazards.

- There are limited staff occupational health services in the health sector.
- There is a need for integration of biosafety and biosecurity training for all relevant stakeholders, and development and implementation of occupational health, safety and vaccination policies beyond the draft phase.

Immunization

Introduction

Immunizations are estimated to prevent more than two million deaths a year globally. Immunization is one of the most successful global health interventions and cost-effective ways to save lives and prevent disease.

Target

A national vaccine delivery system – with nationwide reach, effective distributions, access for marginalized populations, adequate cold chain and ongoing quality control – that is able to respond to new disease threats.

Republic of Liberia level of capabilities

The immunization system of Liberia has experienced some major setbacks during the devastating EVD outbreak of 2014, when immunization coverage dipped compared with previous years. For example, the percentage of fully immunized children dropped from 70% in 2013 to 46% and 54% in 2014 and 2015, respectively. On the other hand, the country has invested resources in terms of both technical assistance, funding and building of infrastructure by international partners during the EVD crisis and improvements in health service delivery, including immunization. As a result, coverage rates are improving, reaching 70% for vaccine coverage for both yellow fever and measles.

The country has a national-level comprehensive multi-year plan for the immunization programme, from which annual plans are developed. Vaccine-preventable diseases covered in this programme include: diphtheria, Haemophilus influenzae type b, hepatitis B, measles, pertussis, pneumococcal infections, poliomyelitis, rotavirus diarrhoea, tetanus, tuberculosis and yellow fever.

Recommendations for priority actions

- Conduct data quality improvement to address issues such as over-reporting, incomplete reporting and use of correct denominators to determine immunization coverage.
- Improve access to immunization, especially in geographically isolated areas, and improve equity between rural and urban areas.
- Ensure the maintenance and/or replacement of ageing cold chain equipment at health facilities.

Indicators and Scores

P.7.1 Vaccine coverage (measles) as part of national programme – Score 3

Strengths/best practices

- Immunization is free in Liberia.
- Findings from knowledge, attitudes and practices studies and focus-group discussions have been used to develop appropriate and robust communication messages.
- Community involvement, such as the participation of community health workers and local authorities, is significant and has helped to create and sustain the demand for child immunization, including immunization for measles.
- The quarterly Expanded Programme on Immunization (EPI) review meetings organized among local staff offer unique opportunities for monitoring immunization performance, and also for sharing best

practices and providing feedback to EPI service providers about possible improvements.

- Support by partners during campaigns and routine immunization contribute to maintaining good immunization coverage.
- The availability of the cold chain at central and regional levels also plays a major role in improving measles and other childhood immunization coverage.

Areas which need strengthening and challenges

- Current efforts to address community distrust experienced during the EVD outbreak must be stepped up.
- The country needs to improve data quality and build the capacity of EPI service providers.
- Communication to stimulate demand for routine immunization is needed
- The breakdown of aging cold chain equipment is a major challenge.

P.7.2 National vaccine access and delivery – Score 4

Strengths/best practices

- Liberia has an extensive cold-chain supply system, with one national cold store and two additional regional cold stores – one in each of the 15 counties.
- All health facilities that provide immunization services have refrigerators.
- Vaccine delivery is available in 80% of districts.
- The country has built on the post-EVD-outbreak momentum and used international partner support to strengthen its delivery system for immunization services.

Areas which need strengthening and challenges

- Immunization outreach services, especially in geographically isolated areas need improvement. As Liberia is recovering from the EVD outbreak and while it is currently receiving substantial resources and technical assistance, it is important that it builds on its experiences and uses this opportunity to strengthen logistics in the health sector in general and its cold chain system in particular.
- Frequent breakdowns of refrigerators at health facilities and poor management of vaccine stocks at the periphery need to be addressed.

DETECT

National laboratory system

Introduction

Public health laboratories provide essential services including disease and outbreak detection, emergency response, environmental monitoring and disease surveillance. State and local public health laboratories can serve as a focal point for a national system, through their core functions for human, veterinary and food safety including disease prevention, control and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.

Target

Real-time biosurveillance with a national laboratory system and effective modern point-of-care and laboratory-based diagnostics.

Republic of Liberia level of capabilities

Significant improvements were made in EVD laboratory testing during and following the EVD outbreak in 2014/2015 and three subsequent flare-ups in 2015/2016, when there was a significant influx of foreign medical teams and trainers. Since the containment of the EVD outbreak, Liberia no longer relies on foreign personnel to perform EVD testing.

A temporary laboratory space has been set-up at the Liberian Institute for Biomedical Research (LIBR) to test for EVD. However, this space requires significant personnel-protective equipment and adequate allocation of space to ensure protection from exposure to EVD pathogens. In addition, the regional laboratories also have EVD testing capability. LIBR conducts microbiology testing and houses the National Reference Laboratory. The facilities, space and some equipment are in place, but it will be necessary to establish a national plan to develop other areas, including bacteriology with a special focus on AMR, food-borne disease surveillance and quality control. LIBR, which houses the National Public Health Reference Laboratory (NPHRL), should evaluate the situation and capacity of the laboratories in different health facilities, establish a plan to implement a national laboratory network, laboratory surveillance system and provide support for the Ministry of Health. In addition, the NPHRL should join efforts with other reference laboratories at the Ministry of Agriculture and Ministry of Commerce and Industry in order to support national activities related to emerging and re-emerging public health risks and IHR (2005).

Recommendations for priority actions

- Update the National Laboratory Policy and finalize the strategic plan.
- Expand testing capacity for IDSR priority diseases.
- Improve laboratory data management and reporting – laboratory information system development.
- Build human resource capacity in the laboratory system.
- Strengthen the laboratory system at all levels - public health and clinical:
 - a. Based on the Essential Package of Health Services;
 - b. Supply chain for laboratory commodities and equipment;

- c. Enhance and expand laboratory infrastructure;
 - d. Develop a quality management system, including external quality assurance and biosafety/bio-security.
- Pursue accreditation of laboratories.

Indicators and scores

D.1.1 Laboratory testing for detection of priority diseases – Score 2

Strengths/best practices

- Significant progress has been made in the detection of EVD. The NPHRL and two additional regional laboratories (Bong and Tappita EVD laboratories) have the capability to test for EVD.
- During the last three outbreaks, the flare-ups were detected early and contained within the first 24 hours, and the country administered the required medical countermeasures (MCMs) locally. This shows the progress that Liberia has made in the area of EVD detection and MCM deployment.
- A five-year Laboratory Strategic Plan exists.
- NPHRL has good facilities.

Areas which need strengthening and challenges

- Liberia does not have the capability to test for a number of IDSR priority diseases in-country, so samples are sent out of the country for testing.
- During the EVD outbreak and response, the NPHRL discontinued all bacteriology testing and is now beginning to re-establish these capabilities.
- A national plan is needed to improve laboratory capacities in order to respond to public health threats.
- Joint efforts should be initiated by the NPHRL, Veterinary Laboratory and National Standards Laboratory.
- There are significant issues with equipment availability and maintenance at the laboratories. It is important to establish a mechanism to maintain and repair biomedical equipment.
- Many pieces of equipment have been damaged by fluctuations in electrical power. Consequently, the laboratories need uninterrupted power supplies with functional emergency generators.

D.1.2 Specimen referral and transport system – Score 3

Strengths/best practices

- The specimen transportation system is partially funded and resourced.
- The designated partner, Riders-for-Health, supports with the transport of clinical and public health specimens from health-care facilities in the counties to centrally located laboratories.

Areas which need strengthening and challenges

- The road system in Liberia is not very well maintained and it can be very difficult to transport materials in a timely manner.
- Cold-chain management, collection and transportation of samples continue to be challenges.

D.1.3 Effective modern point-of-care and laboratory-based diagnostics – Score 2

Strengths/best practices

- There is donor funding to procure medical laboratory equipment, reagents and consumables, and renovation of some laboratory facilities.
- IDSR specimen collection materials are procured and distributed to all counties.

Areas which need strengthening and challenges

- During the EVD outbreak, the national laboratory system was devastated, including the system for human diagnostic testing other than for EVD.
- Currently, the NPHRL for human samples does not have mycological testing capability, and the bacteriological testing capacity is under development.
- Animal disease testing and surveillance capabilities are limited owing to a lack of infrastructure and equipment.

D.1.4 Laboratory quality system – Score 1

Strengths/best practices

- The Liberia National Standards Laboratory has initiated a quality management programme, and the country is working towards ISO certification.
- The Government is also working to establish a national standards board.
- There is capacity for food and water testing services to support public health.

Areas which need strengthening and challenges

- The National Standards Laboratory should support the NPHRL and Veterinary Laboratory in order to create and establish a quality management system.

Real-time surveillance

Introduction

The purpose of real-time surveillance is to advance the safety, security and resilience of the nation by leading an integrated biosurveillance effort that facilitates early warning and situational awareness of biological events.

Target

Strengthened foundational indicator- and event-based surveillance systems that are able to detect events of significance for public health, animal health and health security; improved communication and collaboration across sectors and between sub-national, national and international levels of authority regarding surveillance of events of public health significance; improved country and intermediate level regional capacity to analyse and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems. This would include epidemiologic, clinical, laboratory, environmental testing, product safety and quality and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR and OIE standards.

Republic of Liberia level of capabilities

Liberia adopted and rolled out the IDSR strategy in 2004, although it was not fully functional. Following the revision of the strategy by the WHO Regional Office for Africa in 2010, the country commenced adaptation of the second edition of the IDSR Technical Guidelines in 2014 but this was interrupted by the EVD outbreak later in the same year.

Following the lessons learnt during the EVD outbreak, the Ministry of Health embarked on full implementation of the revised strategy in 2015 beginning by completing the adaptation and printing of the second edition of the Guidelines, training materials and reporting tools and building capacity among health workers through training of over 1500 health workers. The list of priority diseases, conditions and events for surveillance was also revised to include:

- 14 immediately reportable epidemic-prone diseases and events, including those notifiable under the IHR (2005);
- 14 weekly reportable diseases, conditions and events;
- 26 monthly reportable diseases, conditions and events of public health importance.

Currently, the country is implementing the following real-time surveillance strategies:

Community events-based surveillance: CEBS has been implemented in 11 out of the 15 counties. Events are notified to the nearest designated health facility. Also, members of the community who match the CEBS case definitions for IDSR priority diseases are notified and referred to health facilities. The health facilities report to the district or zonal surveillance officers, who have the responsibility to respond. CEBS data are reported to the district, then county and national level every week.

Indicator-based surveillance: includes syndromic surveillance is health-facility-based. When a person matches the IDSR case definition for any disease, condition or event:

- Appropriate clinical care is provided;
- The district surveillance officer is notified immediately, using the fastest available method (VHF radio,

phone, text) for immediately notifiable diseases, conditions and events;

- Laboratory specimens are collected in accordance with the IDSR Technical Guidelines;
- The IDSR case alert and laboratory submission form is completed as required;
- For weekly reportable diseases, conditions and events, all cases identified in the week are summarized by each health facility at the end of each epidemiological week and reported to the district level, including zero reporting; districts report to county level, which maintains an Excel spreadsheet of weekly reports; counties submit their Excel reports to the national level every week; at the national level, data from clinical sites are matched with laboratory results;
- For monthly reportable diseases, conditions and events, all cases identified in the month are summarized by each health facility and reported to the district level using a paper-based system; districts collate their data and report to the county level, where data are entered into the DHIS 2 information management system.

Sentinel surveillance: conducted for selected diseases and pathogens. Currently, sentinel surveillance is conducted for:

- Neglected tropical diseases and Lassa fever at 11 sentinel sites
- Rotavirus at one sentinel site
- HIV at 30 sentinel sites.

The Ministry of Agriculture has identified 11 priority diseases, two diseases of public health importance (rabies and brucellosis) and nine diseases of economic importance. FAO and the Ministry of Agriculture have a surveillance project in areas where there is contact between domestic and wild animals. Every county has one livestock officer, who liaises with county health teams and reports to the Ministry of Agriculture as needed. There exists a formal reporting system for animal health, although this system faces challenges that include inadequate numbers of staff at community and district levels.

Recommendations for priority actions

- Build technical capacity for surveillance, including continuing training in IDSR, IHR (2005), data management, clinicians' role in IDSR and use of innovative technology in IDSR.
- Develop electronic web-based reporting platforms with harmonization, integration and interoperability of public health and animal health data sources and platforms.
- Develop a comprehensive animal health surveillance system that sources data from diverse animal health platforms including clinical sources, slaughterhouses, surveys and the community.
- Improve collaboration between the public health, animal health and environmental health sectors under the One Health platform at national and subnational levels.
- Supervise, monitor and evaluate IDSR processes and procedures, including systematic data quality audits and IDSR indicator performance monitoring.

Indicators and scores

D.2.1 Indicator- and event-based surveillance systems – Score 4

Strengths/best practices

- The country revised the IDSR strategy in line with the 2010 revision by the WHO Regional Office for Africa. The revised IDSR Technical Guidelines were developed, printed and disseminated in 2015.
- The country has developed a national IDSR five year strategic plan for the period 2016-2020. This will give direction to stakeholders on the implementation of IDSR.

- Surveillance structures have been established at all levels of the health care system:
 - The national structure is within the Disease Prevention and Control Division of the Ministry of Health;
 - Counties have public health surveillance officers and livestock officers;
 - Each district and health facility has a public health surveillance focal person;
 - In support of the CEBS system that is operational in 11 out of the 15 counties, the country has trained 3247 out of the 7158 deployed community health volunteers, who collect and report information on diseases and events in the community.
- IDSR technical capacity has been developed at national, county, district, health facility and community levels through training of the personnel in IDSR.
- The introduction of FETP front-line training is further contributing to strengthening of real-time surveillance; there is planned scale-up to intermediate and advanced training; there is also a collaborative arrangement that allows personnel from Liberia to undertake advanced training in Ghana. Notable best practices include:
 - Recruitment of district surveillance officers for all 90 districts in Liberia;
 - Roll-out of CEBS to increase the sensitivity of the surveillance system;
 - National Surveillance Technical Coordination Committee meetings organized by the Ministry of Health to review IDSR implementation and provide guidance;
 - Implementation of surveillance for zoonotic viruses at the interface between human and domestic animals and wildlife, supported by the PREDICT programme, FAO and preparedness and response programmes is generating valuable information on circulating zoonotic viral agents;
 - The establishment of the Rabies Technical Working Group is a demonstration of collaboration between the public health and animal health sectors;
 - Piloting of the Electronic Disease Early Warning System in four counties.

Areas which need strengthening and challenges

- Roll out CEBS to the remaining four counties.
- Release laboratory results to requesting units and districts in a timely manner so as to guide disease management and public health measures.
- Adopt feedback platforms that will ensure that surveillance information is widely disseminated to all levels.
- Strengthen coordination between the Disease Prevention and Control Division and other programmes collecting surveillance information, as well as the specific disease control programmes such as the Expanded Programme on Immunization, family health, community health, health management information systems, monitoring and evaluation, research and health promotion.
- Establish and strengthen the animal health surveillance network to ensure information collection and reporting from all levels.
- Establish and strengthen collaboration for surveillance and response between the public health and animal health sectors.
- CEBS is resource-intensive; there currently exists a deficit in the funding commitment for the implementation of all components of CEBS in the country.
- There is limited capacity for clinical and public health laboratory services to support real-time surveillance.

- The Ministry of Agriculture does not have adequate personnel at all levels to support implementation of surveillance activities.

D.2.2 Interoperable, interconnected, electronic real-time reporting system – Score 2

Strengths/best practices

- A reporting structure exists at all levels of the public health system.
- An Excel-based system is being utilized at national and county level for priority disease weekly reporting.
- An electronic early warning system has been developed and is being piloted in four out of 15 counties.
- An animal health gap analysis was conducted in 2015 and is being acted on.
- The Ministry of Health has been working with subnational levels since 2015 to increase reporting coverage through IDSR training.
- Counties conduct support supervision to improve IDSR reporting.

Areas which need strengthening and challenges

- There is a need to strengthen reporting of IDSR data from all sites, including referral hospitals.
- There is incomplete reporting from some facilities.
- Only one livestock officer has been trained to use the One Health platform for the Ministry of Agriculture. There is a need to train more livestock officers.
- According to the national health workers' census (2016), the mobile network coverage at health facilities is estimated at 76%. This will be a challenge to the expansion of the Electronic Disease Early Warning System for real-time surveillance.
- Inadequate numbers of personnel for animal and wildlife surveillance at all levels will hamper real-time surveillance.

D.2.3 Analysis of surveillance data – Score 4

Strengths/best practices

- The national level analyses and interprets data on epidemic-prone diseases every week.
- All counties analyse surveillance data and present the findings at weekly surveillance meetings.
- Laboratory data are usually matched to clinical surveillance data at national and county levels.
- The surveillance programme produces a national weekly epidemiological bulletin which is disseminated to stakeholders (partners, counties, etc.). The bulletins are used for information-sharing and feedback on priority diseases, conditions and events.
- There is validation of data from the county level against data at the national level.
- Ministry of Agriculture reportable diseases are analysed every month.
- Regular production of the weekly epidemiological bulletins and weekly presentation of data on epidemic-prone diseases to stakeholders during weekly incident-management meetings.
- The Ministry of Agriculture disseminates surveillance information on the web and through the Livestock Communication Officer.

Areas which need strengthening and challenges

- There is currently no analysis or dissemination of surveillance data on diseases reported monthly .
- Surveillance data should be analysed in longer time periods (quarterly and annually) to show longer-term trends.

- Information from data analysis should be disseminated widely using platforms with a wider reach.
- The Ministry of Agriculture should be supported in establishing a database and capacity for consistent data analysis and information-sharing
- The Ministry of Agriculture should be supported in producing epidemiological bulletins of events in animal populations, establishing databases that will be of historical value and building capacity among data managers.

D.2.4 Syndromic surveillance systems – Score 4

Strengths/best practices

- Syndromic surveillance is the core of IDSR, allowing for surveillance of most IDSR priority diseases, conditions and events like acute flaccid paralysis, severe acute respiratory syndrome, influenza and cholera. It is fully functioning in the country at all levels.

Areas which need strengthening and challenges

- Strengthen the interoperability of the IDSR, DHIS 2, the WHO Logistics Management and Information System, etc.
- Strengthen capacity for laboratory confirmation of IDSR priority diseases, conditions and events to support syndromic surveillance.

Reporting

Introduction

Health threats at the human–animal–ecosystem interface have increased over the past decades, as pathogens continue to evolve and adapt to new hosts and environments, imposing a burden on human and animal health systems. Collaborative multidisciplinary reporting on the health of humans, animals and ecosystems reduces the risk of diseases at the interfaces between them.

Target

Timely and accurate disease reporting according to WHO requirements and consistent coordination with FAO and OIE.

Republic of Liberia level of capabilities

The Liberia IDSR Technical Guidelines have a list of priority diseases, conditions and events for reporting within the IDSR strategy. The reporting frequency is immediate, weekly or monthly. The reporting flow is initiated by either the community or a health facility that first detects the event. The community focal person reports to the designated health facility, which collates the community reports and reports to the zonal or district surveillance officer. The zonal or district surveillance officer, in turn, collates all reports and submits them to the county surveillance officer using a paper-based system. The county surveillance officers enter the reports into an Excel template and send this to the national level.

The Ministry of Agriculture also has a list of priority reportable conditions. The reporting flow is from county to national level, although this system is not well developed as the country lacks adequate numbers of livestock officers at all levels.

The designated national IHR focal point at the Ministry of Health is the Disease Prevention and Control Director, who reports to WHO in the event of a public health emergency of international concern (PHEIC) in the country. The national focal point rapidly reported confirmed cases of EVD during the last two flare-ups, as well as Lassa fever cases in 2016. The OIE country delegate and focal point for disease reporting is based at the Ministry of Agriculture and reports according to OIE guidelines. The focal point reported events related to rabies and peste des petits ruminants in 2016.

Collaboration in information-sharing between the Ministry of Health and Ministry of Agriculture is weak. It is noted that, even though health facilities have been informed of the animal health contacts for rabies at the Ministry of Agriculture, the contact does not usually receive calls or offer technical support to health facilities in need. There is now an opportunity for improvement in the current strengthening of collaboration, by operationalizing One Health committee meetings and by deploying livestock officers in all counties.

Recommendations for priority actions

- Institutionalize One Health committee structures at national and subnational levels, with structured information-sharing between the national IHR focal point and the OIE delegate.
- Strengthen the reporting structure for animal health events within the Ministry of Agriculture and develop a surveillance database at the Ministry.
- Build capacity for IHR reporting within the Ministry of Health and Ministry of Agriculture, including training for personnel and continued training for the national IHR focal point and OIE delegate.
- A food safety focal point should be identified and a relationship with the national IHR focal point established.

Indicators and scores

D.4.1 System for efficient reporting to WHO, FAO and OIE – Score 2

Strengths/best practices

- The national IHR focal point exists and reports to WHO as prescribed by the IHR (2005) guidelines; this has been tested through real events in 2016;
- Reporting completeness and timeliness are well above the target of 80%.
- An OIE delegate is in place and reports to OIE-WAHIS within three days; rabies and peste des petits ruminants were reported in 2016.
- Ministry of Agriculture delegates attend Ministry of Health Incident Management System meetings to coordinate the management of zoonoses.

Areas which need strengthening and challenges

- Nomination of dedicated focal persons/IHR focal points in line ministries.
- Institutionalization of and support for formal communication between the national IHR focal point and OIE delegate.
- Training for the national IHR focal point and the OIE delegate on reporting of PHEICS.

D.4.2 Reporting network and protocols in country – Score 2

Strengths/best practices

- Standardized reporting forms are used across the country.
- Health facilities have designated and trained surveillance focal persons.
- All districts and zones have dedicated and trained surveillance officers.
- During the EVD outbreak and subsequent flare-ups, the country's protocols were put in place and tested.
- An effective Ministry of Health Incident Management System exists, which produces and disseminates daily situation reports to all stakeholders.
- The information flow system is strong, from communities, right up to health facilities, districts, counties and the national level in accordance with the IDSR strategy.
- The Ministry of Agriculture has developed guidelines and SOPs that include reporting.

Areas which need strengthening and challenges

- Establish and strengthen capacity for Ministry of Agriculture reporting at all levels.
- Strengthen capacity for implementation of One Health.
- Establish a central database at the Ministry of Agriculture.

Workforce development

Introduction

Workforce development is important in order to develop a sustainable public health system over time by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills and subject-matter expertise.

Target

States Parties with skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005). Republic of Liberia level of capabilities

The country is commended for its post-Ebola efforts to build workforce capacity at national and intermediate levels, as well as the swift mobilization of human resources and financial and technical support during the EVD outbreak. While there is appreciable human resource capacity in human health at national level, animal health is grossly under-resourced. Moreover, other types of worker are still needed to ensure full compliance with the requirements of workforce development. The One Health workforce is therefore a critical area that needs a lot of improvement. To address this gap, the Ministry of Health plans to include workforce development as one of the agenda items at its intersectoral meetings.

There are human resources for health plan in Liberia. For the front-line, intermediate and advanced levels of training in epidemiology, the focus is currently on in-service training. However, there are plans for pre-service training in future. The Ministry of Health has plans to select the best competent staff with basic epidemiology training and move them to the intermediate or advanced level. There are plans to have one additional cohort of basic epidemiology training for the remaining quarter of 2016. By the end of October 2016, the Ministry of Health will have trained 100% of all surveillance officers. In addition, the United States Centers for Disease Control and Prevention (CDC) will support the country to ensure that it has an in-country FETP at both intermediate and advanced levels. Generally, continuing professional development/training and training of trainers is one critical area for continuous improvement for the country.

Liberia is exploring ways of retaining trained animal and human health personnel, such as FETP graduates and those that were trained during the recent EVD outbreak, through mobilization of Government and donor funding, as well as offering contracts with the agreement from the outset that the trained personnel will serve the public for a specified time period (bonding). In addition, the country is looking at various ways such as salary increments and creation of favourable working environments with, for instance, reliable supplies of equipment and medicine. Trained personnel are being encouraged to take ownership and to assist with teaching of new graduates or staff.

Developing a strategy to track and retain qualified staff is challenging, because the current Government pay is not attractive unless there is donor funding.

Documentation and sharing of lessons learned during the response to major public health events and outbreaks such as the EVD outbreak are under way.

The unavailability of a system to track performance was noted as a challenge. There is a gap between communities and health facilities. However, there are efforts to make use of communities (general community health volunteers) to address maternal health issues. The country is keen to improve its infrastructure, including roads, health facilities and emergency/referral transport-ambulances.

Recommendations for priority actions

- Mobilize resources for the continuing professional development and training programme in the context of One Health.
- Ensure that One-Health is emphasized in all training, e.g. FETP and laboratory training.
- Put in place mechanisms to retain trained animal and human health personnel such as FETP graduates and those that were trained during the recent EVD outbreak.
- Collaborate with training institutions to review pre-service training curricula to ensure that One Health, IHR (2005), IDSR and disaster management are addressed.
- Proactively enrol professionals from the animal health sector into field epidemiology and laboratory training programmes (FELTP) to build technical, leadership and managerial skills for national and subnational surveillance and health leadership (basic, intermediate and advanced FELTP courses).
- Support exchange visits with established centres for mentoring of critical staff from human and animal health.

Indicators and scores

D.5.1 Human resources are available to implement IHR (2005) core capacity requirements – Score 1

Strengths/best practices

- Although still not sufficient, there is appreciable human resource capacity in human health at national level. However, there are major gaps in animal health.

Areas which need strengthening and challenges

- The country has limited multidisciplinary capacity for the implementation of IHR core capacities.
- Critical types of worker that are needed include: biostatisticians, information systems specialists and veterinarians for both animal and human health.

D.5.2 Field Epidemiology Training Program or other applied epidemiology training program in place – Score 3

Strengths/best practices

- The country has initiated the basic FETP training of front-line health workers through collaboration with Emory University (Atlanta, GA, United States of America) and AFENET.
- Five FETP fellows are undergoing the advanced training programme in Ghana, and there are plans to introduce the intermediate FETP for intermediate-level health workers.

Areas which need strengthening and challenges

- Additional staff are needed, and training should be considered in both the animal and the human health sector.

D.5.3 Workforce strategy – Score 2

Strengths/best practices

- A health-care workforce strategy exists for human health, but not for animal health.

Areas which need strengthening and challenges

- Capacity development for public health professionals in the human and animal sectors.

RESPOND

Preparedness

Introduction

Preparedness includes the development and maintenance of national, intermediate and community/primary response level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. Other components of preparedness include mapping of potential hazards, the identification and maintenances of available resources, including national stockpiles and the capacity to support operations at the intermediate and community/primary response levels during a public health emergency.

Target

Development and maintenance of national, intermediate (district) and local/primary level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. This covers mapping of potential hazards, identification and maintenance of available resources, including national stockpiles and the capacity to support operations at the intermediate and local/primary levels during a public health emergency.

Republic of Liberia level of capabilities

The country has a national pandemic preparedness and response plan which was developed in collaboration with the Ministry of Agriculture in 2007 and needs to be updated. Similarly, a national EPR plan exists, which focuses on the IDSR epidemic-prone diseases. However, the country does not have a multihazard national public health emergency preparedness and response plan, although EVD surge capacity is available.

Risk and resource mapping has been conducted to address IHR-relevant hazards and priority risks. The Government mobilizes resources and allocates funding for the existing coordination mechanism. Emergency response capacity is available to some extent; however, it requires additional capacity to address chemical, radiological and nuclear threats. The stockpiles available are inadequate and do not provide for a response to other IHR-related hazards.

Liberia has been developed a disaster management strategy, and a national disaster management agency has been established. There is strong political will and strong governmental leadership, as well as strong collaboration between the Ministry of Health and key stakeholders. The country has considerable experience gained from the EVD outbreak response, and has been able to develop 15 county EPR plans in line with the national EPR plan.

However, in the near future Liberia should develop a multihazard national public health emergency preparedness and response plan, while updating its Disaster Risk Reduction Strategy. Permanent isolation sites need to be established and/or improved, accompanied by capacity-building for health workers. Similarly, capacity-building in other areas (e.g. chemical, radiological, nuclear) should be among the priorities, while also ensuring adequate long-term stockpiles.

Among the major challenges the country is facing are inadequate financing, limited human resources and limited technical expertise in areas such as chemical, radiological and nuclear hazards.

Recommendations for priority actions

- Develop a multihazard national public health emergency preparedness and response plan. The plan should be integrated with the POE emergency plans. Moreover, IHR-compliant air and sea plans should also come under the plan. In addition, cross-border collaboration should be considered during the development of the plan.
- Scale-up the creation of permanent isolation sites at all major hospitals.
- Strengthen the protection and safety of human resources for health.
- Establish a pool of technical expertise in multihazard response, including the smooth continuation of routine health services (maternal and child health, EPI, outpatient services, etc.).
- Mobilize adequate resources for preparedness and response and provide adequate stockpile and storage capacity (including personal protective equipment, etc.).

Indicators and scores

R.1.1 Multihazard national public health emergency preparedness and response plan is developed and implemented – Score 1

Strengths/best practices

- Liberia has strong political will and strong governmental leadership, the Ministry of Health enjoys a strong collaboration with other key stakeholders
- The country has learnt a lot from its experience of responding to the EVD outbreak and has developed national and county EPR plans for each of the 15 counties, with 15 county rapid response teams set up and trained
- There are trained responders at national and county level
- A database has been created and there is short-term pre-positioning of supplies.
- Risk mapping for priority public health risks and resources has been completed in 2016.

Areas which need strengthening and challenges

- Liberia needs to develop a multihazard national public health emergency preparedness and response plan, while updating and reviewing the current disaster risk reduction strategy.
- Permanent isolation sites need to be created and/or improved and capacity built, with subsequent improvements in the safety of health workers.
- Capacity-building in other areas (e.g. chemical, radiological, nuclear) should be among the priorities while ensuring adequate long-term stockpiles.
- The main challenges affecting the implementation of planned activities include inadequate financing, limited human resources and limited technical expertise in areas such as chemical, radiological and nuclear hazards.

R.1.2 Priority public health risks and resources are mapped and utilized – Score 2

Strengths/best practices

- The country has the necessary political will and strong governmental leadership to identify gaps and address the recommendations of the JEE accordingly.
- Risk-mapping for priority public health risks and resources was completed with the participation of the Government sectors and key stakeholders engaged in the risk-profiling exercise.

Areas which need strengthening and challenges

- There is a need for strong collaboration between the Ministry of Health and other relevant ministries and agencies.
- Supplies available in the country are EVD-focused and should be expanded to cover other IHR-related hazards.
- There is inadequate technical expertise, especially in respect of chemical, radiological and nuclear hazards, so capacity-building is required in these areas.
- Stockpiles are inadequate.
- In general, inadequate financing and limited human resources hamper the smooth implementation of planned interventions.

Emergency response operations

Introduction

A public health emergency operations centre is a central location for coordinating operational information and resources for strategic management of public health emergencies and emergency exercises. Emergency operations centres provide communication and information tools and services, and a management system during a response to an emergency or emergency exercise. They also provide other essential functions to support decision-making and implementation, coordination and collaboration.

Target

Country with public health emergency operations centre (EOC) functioning according to minimum common standards; maintaining trained, functioning, multisectoral rapid response teams and “real-time” biosurveillance laboratory networks and information systems; as well as trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency.

Republic of Liberia level of capabilities

The establishment of the national and county EOC was one of the key strategies and approaches used to fight the EVD outbreak in 2014/2015. During this outbreak, 13 county structures were rehabilitated and three county EOCs were fully constructed, including the national EOC. The EOCs were supplied with office furniture, computers, TV monitors, internet connection, generators and telephones. These resources will need maintenance to remain operational, so sustainability is an issue. Currently, the EOC convenes meetings which include line ministries and national or multinational partners as the need arises, and hosts video conferences with the counties every Wednesday. The EOC is also home to CDC, AFENET, the Disease Surveillance Unit and the national emergency medical service 24-hour call centre.

The EOC is currently based in a building adjacent to the Ministry of Health of Liberia and is a permanent, well-resourced structure. To operationalize the EOC, there is an established Incident Management System, Emergency Operations Plan, EOC Operational Plan and EOC standard operating procedures. Surge capacity is provided by the 15 county rapid response teams, but retention of trained staff remains a challenge.

Recommendations for priority actions

- Training and retention of surge capacity staff in the competencies required for emergency response operations.
- Government ownership of the various EOCs so as to ensure funding and facilitate appropriate decision-making.
- Authority for the national EOC to mobilize resources required for emergency response.
- Encouragement of intersectoral collaboration through inclusive simulation exercises during deactivation phases to test preparedness plans.

Indicators and scores

R.2.1 Capacity to activate emergency operations – Score 3

Strengths/best practices

- Liberia currently has functional EOCs in all 15 counties and one national EOC.

- There is evidence of district and county rapid response teams that are constituted by staff trained particularly for the response to EVD.
- The principles of response have been practised under circumstances other than EVD, e.g. the response to a measles outbreak, showing that the teams can adapt to different scenarios.

Areas which need strengthening and challenges

- Staff training in emergency management, public health administration and logistics.
- Partners and national authorities should work closely together to transfer skills and knowledge from the EVD response.

R.2.2 Emergency Operations Centre operating procedures and plans – Score 4

Strengths/best practices

- Liberia has tested the capacity of the EOC procedures and plans that were developed as a result of the EVD outbreak. These national and county EPR plans were the guiding documents for the response to the outbreak that ravaged the country.

Areas which need strengthening and challenges

- To ensure that all the great strides that were made during and after the EVD outbreak are not lost, efforts should be made to obtain sustained funding to keep the EOCs functional.

R.2.3 Emergency operations programme – Score 4

Strengths/best practices

- Emergency operations at national and county are decentralized and are guided by sound, well-structured documents. This allows for a certain level of autonomy and decision-making.
- Well-coordinated response during the EVD outbreak from the national and county EOCs.
- The EOC provided multisectoral coordination during the EVD outbreak.

Areas which need strengthening and challenges

- For the efficient coordination of response activities and the day-to-day operations of the EOC, logistics capacity and a long-term equipment maintenance plan, beyond the investment period of partners, must be developed.
- The mobilization of resources for EOC operations still depends on partners, as the EOC has no authority to mobilize resources.

R.2.4 Case management procedures are implemented for IHR-relevant hazards – Score 2

Strengths/best practices

- At present Liberia has hazard-specific contingency plans in place.

Areas which need strengthening and challenges

- The hazard-specific contingency plans are not specific for case management and require development before they are institutionalized by all relevant stakeholders, as noted by in-country representatives.

Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade (e.g. the anthrax terrorist attacks) or naturally occurring (e.g. flu pandemics). In a public health emergency, law enforcement will need to quickly coordinate its response with public health and medical officials.

Target

Country conducts a rapid, multisectoral response in case of a biological event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide and/or request effective and timely international assistance, such as to investigate alleged use events.

Republic of Liberia level of capabilities

In 2014/2015, Liberia experienced the EVD outbreak (classified as a PHEIC) with neighbouring Guinea and Sierra Leone, which necessitated a multisectoral response involving both national and international stakeholders. Liberian security services (Armed Forces of Liberia, police, border forces) played a critical role in providing the security, order and logistics support required to enable the safe delivery of response and other essential health services. They also helped in community-focussed surveillance and in conducting safe and dignified burials. There has been considerable goodwill and motivation to sustain and expand the links between the public health and security services.

Health security is covered in the Liberian Armed Forces training manual, Healthcare and danger; there is a proposal to extend it to the police and other security authorities. The role of security services is identified in the 2016 Epidemic Preparedness and Response Plan.

There are clear needs and expectations for institutionalization of the existing links. Existing legal and policy instruments should be reviewed, which could lead to formalized partnership arrangements and development of SOPs. The anticipated framework for the National Emergency Preparedness and Response Plan could be instrumental to the further development of the links between the public health and security services.

Recommendations for priority actions

- Integrated capacity development (training, simulations, exercise, experience-sharing) on integration and joint working, involving relevant security authorities and those in public health.
- Development and harmonization of appropriate legal, policy instruments and operational package (MoU, SOPs) to ensure multisectoral health preparedness and response.
- Reporting and information-sharing mechanisms including cross-border collaboration.
- Collaboration with stakeholders – outside of the Government sector.

Indicators and scores

R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event – Score 4

Strengths/best practices

- Liberia has demonstrated capacity to integrate security authorities (Armed Forces of Liberia, police, border security) with public health and associated sectors to deliver national emergency response such

as the EVD outbreaks in 2014/2015 and floods. The security sector was critical to ensure the security and logistical platform to mobilize international support and response at the front line.

- There is legislation and policy documentation (Epidemic Preparedness and Response Plan) that requires the security services to collaborate with national health authorities in responding to outbreaks and disasters.
- A flow of information between the security and relevant sectors has been established, and security services play an important role in emergency medical stocks and supplies. The participation of a range of security services during the JEE process is further evidence of successful coordination.

Areas which need strengthening and challenges

- There is still a need for organizational and systematic approaches to sustain and further strengthen the good integration demonstrated during the EVD outbreak.
- There is a lack of integrated training and limited capacity-building within security, public health and associated sectors related to specific roles and responsibilities, information-sharing, and coordinated investigation and response.
- There is a need for further legal, policy and operational instruments (MoU, SOP) to support and sustain the coordination within the security services and with those in public health nationally and internationally.
- Funding, logistics and skills are recognized as inadequate and in short-supply.

Medical countermeasures and personnel deployment

Introduction

Medical countermeasures are vital to national security and protect nations from potentially catastrophic infectious disease threats. Investments in medical countermeasures create opportunities to improve overall public health. In addition, it is important to have trained personnel who can be deployed in case of a public health emergency for response.

Target

National framework for transferring (sending and receiving) medical countermeasures, and public health and medical personnel from international partners during public health emergencies.

Republic of Liberia level of capabilities

Liberia has developed policy documents and has created the necessary political will for the deployment of medical countermeasures. Bodies have been set up to govern and oversee the deployment of medical personnel and utilization of human health products and technology. These governing bodies demonstrated their effectiveness in the most recent EVD outbreak in 2014/2015 and three subsequent flare-ups in 2015/2016, where there was a significant influx of MCMs and foreign medical teams.

The only national plan that addresses the use of MCMs is the Republic of Liberia Avian and Human Influenza Integrated National Action Plan (AHI INAP). In addition, Liberia has no provisions for procuring or distributing animal MCMs.

The Ebola vaccine has been tested and used in Liberia to prevent potential EVD. Since the country initially acquired the vaccine, the stockpiles have been transferred to the Ministry of Health. The Government has increased its ability to respond actively to outbreaks and has prepositioned MCMs in all 15 counties. The last three outbreaks were managed by the counties, and the response was initiated within the first 24 hours. This shows the progress that Liberia has made in the area of MCM deployment.

Recommendations for priority actions

- Identify existing collaborations and any gaps and, where necessary, finalize and exercise plans, guidelines and relevant agreements for sending and receiving MCMs during a public health emergency.
- Update the pandemic preparedness plan.
- Develop regulations for MCMs and agreements with other institutions and/or with regional/institutional bodies.
- Sustain mobilization of emergency medical supplies and vaccines.

Indicators and scores

R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency – Score 4

Strengths/best practices

- Liberia's capacity has increased significantly following the recent EVD outbreaks.

- National guidelines for receiving drug donations exist, and there is the logistical capacity to manage and distribute medical supplies and equipment.
- The Liberian MCM deployment strategy is a best practice, and has shown the country's ability to detect, diagnose, treat and contain EVD quickly in order to prevent additional exposure and save lives.
- Pharmacists receive training on MCMs as a part of their curriculum to increase capacity in the future and assist with long-term sustainability.

Areas which need strengthening and challenges

- Sustainability of the current MCM stockpiles and infrastructure is likely to be a challenge without donor support because of insufficient resources. Liberia needs to develop a long-term MCM sustainability strategy.

R.4.2 System is in place for sending and receiving health personnel during a public health emergency – Score 4

Strengths/best practices

- Liberia has shown successful experience of working with foreign medical teams during the recent EVD outbreak.
- The Government coordinated the deployment, monitored the work of the foreign medical teams and facilitated the licensing of foreign medical teams.
- Liberia is member of AFENET, which helps facilitate rapid exchange of personnel in public health emergencies.
- Access to technical assistance from existing development partners (e.g. WHO, United Nations Children's Fund (UNICEF), FAO, Médecins Sans Frontières, CDC, International Organization for Migration (IOM), USAID) under the leadership of the Government has been demonstrated in recent emergencies.

Areas which need strengthening and challenges

- Availability of readily available funds for MCMs and personnel deployment.
- Mobilization and deployment of multidisciplinary, skilled and motivated personnel for any public health emergency.
- Documentation of the procedures on deployment of foreign medical teams.

Risk communication

Introduction

Risk communications should be a multilevel and multifaceted process which aims at helping stakeholders define risks, identify hazards, assess vulnerabilities and promote community resilience, thereby promoting the capacity to cope with an unfolding public health emergency. An essential part of risk communication is the dissemination of information to the public about health risks and events, such as disease outbreaks. For any communication about risk caused by a specific event to be effective, the social, religious, cultural, political and economic aspects associated with the event should be taken into account, including the voice of the affected population.

Communications of this kind promote the establishment of appropriate prevention and control action through community-based interventions at individual, family and community levels. Disseminating the information through appropriate channels is essential. Communication partners and stakeholders in the country need to be identified, and functional coordination and communication mechanisms should be established. In addition, the timely release of information and transparency in decision-making are essential for building trust between authorities, populations and partners. Emergency communications plans should be tested and updated as needed.

Target

State Parties use multilevel and multifaceted risk communication capacity. Real-time exchange of information, advice and opinions between experts and officials or people who face a threat or hazard (health or economic or social wellbeing) to their survival, so that informed decisions can be made to mitigate the effects of the threat or hazard and protective and preventive action can be taken. This includes a mix of communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement.

Republic of Liberia level of capabilities

Risk communication is a core component of the EPR plan in Liberia. The Ministry of Health plays a stewardship role with the objective of timely and appropriate communication of public health threats before, during and after events. The country has developed a risk communication plan which involves roles played by other stakeholders such as the Ministry of Information and the media. Community outreach programmes are being implemented, and communities are educated on risk reduction related to public health. However, there is still a need for strengthening partnership coordination and increasing resource allocation.

Recommendations for priority actions

- Increase resource allocation to implement the risk communication plan and reach areas that are hard to reach.
- Sustain community involvement and participation.
- Identify, train and support more staff at county and district level.
- Improve internal and multisectoral stakeholder communication and engagement.

Indicators and scores

R.5.1 Risk communication systems (plans, mechanisms, etc.) – Score 3

Strengths/best practices

- The EVD experience on risk communication made the country move to an outstanding level of practice
- The public (including small children) understands and works very well with the risk communication team to improve disease prevention.

Areas which need strengthening and challenges

- Increase allocation and alignment of human and financial resources.

R.5.2 Internal and partner communication and coordination – Score 4

Strengths/best practices

- The EVD outbreak led to improved skills in effective and regular communication with stakeholders and partners at national, county and district levels. The challenge is for the country to sustain this strength.

Areas which need strengthening and challenges

- Beside the EVD experience, the country still needs to demonstrate continuous capacity and sustainability over time.

R.5.3 Public communication – Score 4

Strengths/best practices

- The country is in continuous engagement with communities on public health issues such as disease prevention and immunization.
- Messages are shared with the community before, during and after outbreaks in vernacular languages.

Areas which need strengthening and challenges

- The country still needs to identify more communication channels in order to achieve comprehensive geographical coverage.

R.5.4 Communication engagement with affected communities – Score 2

Strengths/best practices

- The risk communication and EPR plan addresses issues of formal community-level engagement, with partners and stakeholders identified and involved.

Areas which need strengthening and challenges

- There is a need to improve regular briefing, training and engagement, monitoring and supervision of social mobilization and community engagement teams.

R.5.5 Dynamic listening and rumour management – Score 3

Strengths/best practices

- Mechanisms are in place to monitor and investigate rumours.

Areas which need strengthening and challenges

- Sustain mechanism to monitor rumours and implement risk communication.

OTHER IHR-RELATED HAZARDS AND POINTS OF ENTRY

Points of entry

Introduction

All core capacities and potential hazards apply to “points of entry” and thus enable the effective application of health measures to prevent international spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings), which will implement specific public health measures required to manage a variety of public health risks.

Target

States Parties designate and maintain core capacities at international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings) that implement specific public health measures required to manage a variety of public health risks.

Republic of Liberia level of capabilities

The country has set up a multisectoral committee to discuss and monitor POE activities. The stakeholders have assigned focal persons for the POE. Various laws are available and have been implemented, including the Public Health Law of Liberia, the Environmental Protection Agency Act, the Civil Aviation Authority Act, the Airport Authority Act, the Maritime Authority Act, the Agriculture Law of Liberia and the National Forestry Reform Law.

The country has limited skilled capacity at POE in respect of both animal and human health. However, there is good coordination between the different Government departments. There is a border control and security presence at entry and exit points. At seaports and airports, public health emergency plans and training modules are available, but in draft form. In-service training was conducted using EVD as an entry point. The management of port authorities provided logistical support in coordination with relevant governmental bodies and the private sector also provided support during the EVD emergency.

A major challenge is limited capacity and sustainability of the efforts put in place during the EVD outbreak.

Recommendations for priority actions

- Develop a contingency plan for the four designated POE and other priority non-designated POE as per Ministry of Health guidelines, including mechanisms for retaining staff and capacity at the POE.
- Develop a roadmap for the next five years to ensure that the four currently designated POE, and others as prioritized by the Ministry of Health, have a sustained mechanism for proper referral of ill travellers and integrate the POE into national surveillance/reporting systems.
- Ensure that all designated POE have facilities to detect public health threats.

Indicators and scores

POE.1 Routine capacities are established at POE – Score 2

Strengths/best practices

- There are guidelines and SOPs in place at POE; and in some cases there are flow charts and information charts on the walls.
- Staff is available from both animal and human health.
- Draft training materials are available for in-service training.
- SOPs, public health emergency plans and training modules for sea and airports are under development (first drafts available).

Areas which need strengthening and challenges

- There are limited skilled human resources.
- Training is conducted separately for the human and animal health workforce.
- There is a need to build capacity at all levels for surveillance, preparedness and response.
- There is a need to develop a risk communication plan for sharing information to the public and travellers regarding entry/exit controls.

POE.2 Effective public health response at points of entry – Score 1

Strengths/best practices

- There are guidelines and SOPs for referrals if an incident happens at the airport for both medical and animal health.
- At the sea port, the health facility and port health staff respond to health emergencies on a vessel or at the port.
- Memoranda of understanding (MoU) with referral centres for animal health are in place, between the Ministry of Agriculture and private veterinary facilities.
- At ground crossing, staff is available for both animal and human health; transport is available for referral of both animals and human patients if required.

Areas which need strengthening and challenges

- The main challenges include: inadequately trained human resources, insufficient logistics, inadequate coordination between different partners and sustainability of efforts instituted.
- There is no official quarantine area available for animal health.

Chemical events and radiation emergencies²

Introduction

Timely detection and effective response of potential chemical risks and/or events require collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal. This would entail that State Parties need to have surveillance and response capacity to manage chemical risk or events and effective communication and collaboration among the sectors responsible for safety.

Target

States Parties with surveillance and response capacity for chemical risks or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, industries, transportation and safe disposal.

Republic of Liberia level of capabilities

In Liberia, experience in managing the harmful impact of exposure to chemicals and radiation on public health is still in its infancy. Authorities (Environment Protection Agency, Land, Mines and Energy, National Standard Laboratory, Ministry of Agriculture, Liberia Medicine and Health Regulatory Authority, and Ministry of National Defense) have developed organization-specific guidance but lacks in legislative framework and multisectoral coordination to enable their implementation.

Reports of uncontrolled release of chemicals are not uncommon (industrial explosions, agrochemical spillage, industrial effluent discharge) and public concerns over chemicals and radiation safety are on the rise in parallel to their increasing availability, use and application.

There has been no chemical or radiation assessment done in the last five years, except the Liberia Medicine and Health Regulatory Authority inventory on expired chemicals in storage at the National Standard Laboratory. Liberia has ratified major international conventions – the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Stockholm Convention on Persistent Organic Pollutants, the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal and the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. The current emphasis is on the context of CBRN (chemical, biological, radiological and nuclear) health security.

Recommendations for priority actions

- Develop and implement regulatory and coordinated institutional framework for the planning and management of chemicals, biological, radiation and nuclear public health risk and impacts.
- Develop coordinated capacity, practical guidance and operating procedure for the detention, response and containment of the accidental and deliberate release of chemicals and radiological agents.
- Formulation of a national CBRN risk assessment team comprising stakeholders from ministries and agencies of the Government. This should include the development of a national action plan on CBRN and explore consideration of chemical and radiation monitoring in the national public health surveillance programme.

² To align with the Government's reporting format for national capacities on chemicals and radiation, we submit here a combined report for these two technical areas from the JEE team.

Indicators and scores

Chemical events

CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies – Score 1

CE.2 Enabling environment is in place for management of chemical events – Score 1

Radiation emergencies

RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies – Score 1

RE.2 Enabling environment is in place for management of radiation emergencies – Score 1

Strengths/best practices

- Liberia has made progress in establishing a national platform for CBRN hazards and has conducted a needs assessment.
- The country has ratified a number of relevant global conventions and supported the adoption of the United Nations Security Council resolution 1540 (2004).
- A national focal person for CBRN has been identified.

Areas which need strengthening and challenges

- No legislative or institutional framework to manage the public health risk of exposure to toxic chemicals or radiation exists; this has limited the capacity of national authorities in enforcement and control jurisdiction.
- There is a need to strengthen multisectoral communication, collaboration and coordination, beginning with the national CBRN platform.
- There is an acute shortage of capacity to support public health surveillance of CBRN, response, containment and medical toxicology.
- There is a lack of understanding of wider stakeholders over chemical and radiation risk.
- There is a need for a robust coordination mechanism for systematic information-sharing among relevant sectors to be involved in chemicals and radiation surveillance and emergency response.

Appendix 1: JEE background

Mission place and dates

Monrovia, Republic of Liberia; 5–9 September, 2016

Mission team members

Dr Ambrose Otau TALISUNA	Team Lead	Congo	WHO Regional Office for Africa
Ms. Susan WEEKLY	Co-Lead	United States of America	Department of Defense
Dr Donewell BANGURE	Member	African Union	Africa Centres for Disease Control and Prevention
Dr Faiqa K EBRAHIM	Member	Congo	WHO Regional Office for Africa
Dr Yohannes GHEBRAT	Member	Eritrea	WHO
Dr Nevashan GOVENDER	Member	South Africa	National Institute for Communicable Diseases
Ms Mary Anne GROEPE	Member	South Africa	WHO
Mr Jorge MATHEU	Member	Switzerland	WHO Headquarters
Dr Serigne NDIAYE	Member	Cote d'Ivoire	CDC
Ms Takalani Girly NEMUNGADI	Member	South Africa	Ministry of Health
Dr Shikanga O-TIPO	Member	Sierra Leone	WHO
Dr Sohel SAIKAT	Member	Switzerland	WHO Headquarters
Dr Roland SULUKU	Member	Sierra Leone	FAO
Mr Roland K. WANGO	Technical Officer	Congo	WHO Regional Office for Africa

Objective

To assess Liberia's capacities and capabilities relevant for the 19 technical areas of the JEE tool in order to provide baseline data to support Liberia's efforts to reform and improve their public health security.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation, including discussions around the scores, the strengths, the areas that need strengthening, best practices, challenges and the priority actions should be collaborative, with JEE team members and host country experts seeking full agreement on all aspects of the final report findings and recommendations.

Should there be significant and irreconcilable disagreement between the external team members and the host country experts, or among the external, or among the host country experts, the JEE team lead will decide the outcome; this will be noted in the final report along with the justification for each party's position.

Preparation and implementation of the mission

- Held weekly teleconferences on the mission
- Searched for team Lead and Co-Lead
- Put together JEE team
- Shared self-assessment report and other technical documents with JEE team

- Provided logistics assistance to JEE team
- Liaised with WHO Liberia Country Office for routine update on preparations
- Dispatched advance team from the WHO Regional Office for Africa to provide technical and logistic support
- Ensured smooth coordination and implementation of the evaluation

Limitations and assumptions

- The evaluation was limited to one week, which limited the amount and depth of information that could be managed.
- It is assumed that the results of this evaluation will be publically available.
- The evaluation is not just an audit. Information provided by <host country> will not be independently verified but will be discussed and the evaluation rating mutually agreed to by the host country and the evaluation team. This is a peer-to-peer review.

Key host country participants and institutions

Government

- Senate Committee on Health
- Ministry of Agriculture
- Ministry of Commerce and Industry
- Ministry of Foreign Affairs
- Ministry of Health
- Ministry of Internal Affairs
- Ministry of Justice/Liberian National Police, Bureau of Immigration and Naturalization, Liberia National Fire Service
- Ministry of National Defense/ Armed Forces of Liberia
- Environmental Protection Agency
- Liberia Airport Authority/ Civil Aviation Authority
- Liberia Maritime Authority
- Liberia National Red Cross Society
- National Port Authority

International and intergovernmental partners

- CDC
- FAO
- International Rescue Committee/Partnerships for Advancing Community-Based Services (IRC/PACS)
- IOM
- UNICEF
- USAID
- WHO
- Media institutions
- (See Appendix 2 for details)

Supporting documentation provided by host country

- See Appendix 3.

Appendix 2. Participants in the Joint External Evaluation

Category	Organization	# invited	Attendance
1	Ministry of Health – central level		
	Minister of Health	1	Yes
	Deputy Minister for Disease Surveillance and Epidemic Response	1	Yes
	Deputy Minister for Health Services/ Chief Medical Officer	1	Represented
	Deputy Minister for Planning	1	Represented
	Disease Prevention and Control Division	10	Yes
	Assistant Minister for Curative/Preventive	1	Yes
	Assistant Minister for Planning /Statistics	1	Yes
	Community Health	2	Yes
	Coordinator/HMER	2	Yes
	County Health Services	2	Yes
	Expanded Programme on Immunization	2	Yes
	Health Promotion	2	Yes
	Human Resources	2	Yes
	Laboratory	4	Yes
	Occupational and Environmental Health Division	3	Yes
	Secretariat staff	3	Yes
	Subtotal	38	
	2	Ministry of Health – county level	
County health officers (Montserrado, Gbarpolu, Bong, Grand Cape Mount, Lofa and Nimba)		6	Yes
Subtotal		6	
3	Implementing organizations		
	CDC	1	Yes
	FAO	3	Yes
	IOM	1	Yes
	IRC/PACS	4	Yes
	Japan International Cooperation Agency	1	No
	UNDP	2	No
	UNICEF	1	Yes
	USAID	2	Yes
	WHO	5	Yes
Subtotal	20		
4	Legislative Committee on Health	1	Yes
	Subtotal	1	
5	Key stakeholders		
	Ministry of Agriculture	4	Yes

Category	Organization	# invited	Attendance
	Ministry of Commerce	2	Yes
	Ministry of Defence (Armed Forces of Liberia)	3	Yes
	Ministry of Internal Affairs	2	Yes
	Ministry of Justice (BIN)	2	Yes
	EPA (Environmental Protection Agency)	2	Yes
	Liberia Aviation Authority	1	Yes
	Liberia Maritime Authority	1	Yes
	Liberia National Fire Service (LNFS)	2	Yes
	Liberia National Red Cross Society	2	Yes
	Liberian National Police (LNP)	2	Yes
	National Disaster and Relief Commission/ NDMA	2	Yes
	National Port Authority	1	Yes
	Robert International Airport	1	Yes
	University of Liberia (Medical & Health Sciences)	1	No
	Media institutions	14	Yes
	Subtotal	42	
	TOTAL	117	111

Appendix 3. Supporting documentation provided by host country

Technical area	Reference documents
Antimicrobial resistance (AMR)	<ul style="list-style-type: none"> ■ National IPC Programme and Guidelines for Health Care Settings, August 2016 ■ Five Year Strategic Plan for the National Laboratory System of Liberia, 2016–2021 ■ National Drug Policy, 2001 ■ National Laboratory Policy, September 2011 ■ National Technical Guidelines for Integrated Disease Surveillance and Response, June 2016 ■ National Therapeutic Guidelines for Liberia and Essential Medicines List, 2011 ■ Liberia Medicines and Health Products Regulatory Authority (LMHRA) Act, 2010 ■ Pocket Guide Supplement for the Management of MDR-TB in Liberia, 2013 ■ National Tuberculosis Infection Control Guidelines, 2012
Food safety	<ul style="list-style-type: none"> ■ Agriculture Law, Liberian Codes Revised, Vol. II ■ Fisheries And Aquaculture Policy and Strategy, 2014 ■ Food and Agriculture Policy and Strategy; “ From Subsistence to Sufficiency ■ National Guidelines on Hygiene Promotion, January 2014 ■ Phytosanitary Capacity-building Strategy in Africa, Technical report – Chinappen, 14 September 2011 ■ Public Health Law, 1976
IHR coordination	<ul style="list-style-type: none"> ■ An Act to establish the National Disaster Management Agency (NDMA), May 2012 ■ Avian and Human Influenza Integrated National Action Programme (AHI INAP), 2007 ■ Global Health Security Agenda and Roadmap, 2015–2019 Investment Plan for Building a Resilient Health System, 2015– 2021 ■ Investment Plan for Building a Resilient Health System, 2015 -2021 ■ National Disaster Management Policy, October 2012 ■ National Technical Guidelines for Integrated Disease Surveillance & Response, June 2016

Technical area	Reference documents
Legislation, policy and financing	<ul style="list-style-type: none"> ■ Agriculture Final Annual Report English ■ Agriculture Law ■ Fisheries Policy ■ Food and Agriculture Policy and Strategy ■ Hygiene_Promotion_Technical_Guidelines_final_2.6 ■ Liberia Global Health Security Agenda Five-Year-Roadmap,2016 ■ Maritime Authority Act ■ National Forestry Reform Law ■ National Technical Guidelines for IDSR, June 2016 ■ Phytosanitary Capacity Building Strategy for Africa, Technical Report – Chinappen, 14 September 2011 ■ Public Health Law, 1976
Zoonotic disease	<ul style="list-style-type: none"> ■ 2015 Annual Report- Ministry of Agriculture ■ Avian And Human Influenza Integrated National Action Programme (AHI INAP), February 2007 ■ Draft Veterinary Law ■ Final_Meeting_GapAnalysis_OIE_Eng_Liberia_2016 ■ Liberia IDSR Case Alert and Lab Submission Form ■ Liberian Codes Revised Vol. II, Agriculture Law ■ Agriculture Law ■ National Forestry Reform Law, 2006 ■ National Livestock Policy And Action Plan June 2014 ■ National Technical Guideline for IDSR June 2016 ■ Phytosanitary Capacity Building Strategy for Africa, Technical Report – Chinappen, 14 September 2011 ■ Proposed animal disease law ■ Performance of Veterinary Services (PVS), 2015 ■ PVS Evaluation Report January 2013

Technical area	Reference documents
Biosafety and biosecurity	<ul style="list-style-type: none"> ■ Draft National IPC Programme and Guidelines for Health Care Settings, August 2016 ■ Five Year Strategic Plan for the National Laboratory System of Liberia, 2016– 2021 ■ Health and Safety Guidelines for National Health Laboratory Services in Liberia, zero draft 2012 ■ National Drug Policy, 2001 ■ National Laboratory Policy, September 2011 ■ National Medicines Policy, draft version 2,; 30 October 2011 ■ National Therapeutic Guidelines for Liberia and Essential Medicines List, 2011 ■ Public Health Law, 1976 ■ National Biosafety Framework, November 2004
Immunization	<ul style="list-style-type: none"> ■ 2015 Report Rate Summary ■ 2015 Routine Immunization Performances by Health Facility and County ■ Demographic and Health Survey 2013 ■ EPI Comprehensive Multi-Year Plan 2016–2020 ■ EPI Integrated measles campaign Evaluation survey Report Jul 2015 ■ Field Guide For Service Delivery At Health Facility And Community Levels Aug 2011 ■ Introduction of Pneumonia Vaccine to Liberia ■ Introduction of Rotavirus Vaccine into Routine Immunization In Liberia Training Guide April 2016 ■ Liberia IDSR Case Alert and Lab Submission Form ■ National EPI Strategic Plan 2011–2015, Jul y2010 ■ National Policy on Immunization EPI, October 2013 ■ National Technical Guideline for IDSR, June 2016 ■ RI Performance Jan_Dec_2015 ■ Routine Immunization Survey, Liberia, June 2012 ■ Training Guide For Immunization Service Providers
National laboratory system	<ul style="list-style-type: none"> ■ Five Year Strategic Plan for the National Laboratory System of Liberia, draft 4, 2016 ■ Integrated Guidelines for PTCT_HIV&AIDS, 2007 ■ Liberia National Laboratory Standardization Technical Report, 2016 ■ National HIV & AIDS Strategic Plan, 2015–2020 ■ National Laboratory Policy of Liberia, 2011 ■ National Tuberculosis Strategic Plan, 2007–2012 ■ National Technical Guidelines for Integrated Disease Surveillance and Response, June 2016

Technical area	Reference documents
Preparedness	<ul style="list-style-type: none"> ■ 15 counties' EPR plans ■ Rapid Response Teams Training Package, September 2016 ■ Avian and Human Influenza Integrated National Action Programme draft, 2007 ■ Integrated Risk Assessment of Public Health Threats, June 2016 ■ Liberia Ebola Preparedness and Response Plan, September 2014 ■ Liberia_Risk_Assessment June 2016 ■ National Disaster Management Policy, October 2012 ■ National Epidemic Preparedness and Response Plan, April 2016 ■ National Technical Guidelines for IDSR, June 2016
Workforce development	<ul style="list-style-type: none"> ■ Rebuilding Human Resources for Health a Case Study from Liberia, 2011 ■ Strengthening Liberia's Health System: Health Workforce programme proposal 2015–2025
Chemical and radiation	<ul style="list-style-type: none"> ■ Act Creating the Environmental Protection Agency of Liberia, November 2002
Points of entry	<ul style="list-style-type: none"> ■ Public Health Law, 1976 ■ Civil Aviation Authority Act, 2005 ■ Act to Establish Liberia Airport Authority, August 2009 ■ Liberia Maritime Authority Act, 2010 ■ Ministry of Health National Technical Guidelines for IDSR, June 2016 ■ Assessment report ■ Act that created BIN
Risk communication	<ul style="list-style-type: none"> ■ Health Promotion Technical Working Group meeting minutes, 7 December 2015 ■ Health Promotion Technical Working Group meeting minutes, 7 October 2015 ■ Internews Information Saves Lives media newsletter, 18 July 2015 ■ Liberia Ministry of Health National Risk Communication Plan May 2016 ■ Media Workshop, 27 May 2016 ■ Ministry of Health Report – Training of Trainers Workshop on Risk Communication, November 2015 ■ National Health Communication Strategy 2012 – 2017, draft ■ National Technical Guidelines for IDSR, June 2016 ■ Risk Communication for Liberia Five Year Strategic Plan 2016–2020 ■ Risk Communication Strategic Plan for Liberia draft

