

JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the
REPUBLIC OF GHANA

Mission report:
6–10 February 2017



**World Health
Organization**

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Abbreviations

ADMER	Antibiotic Drug Use Monitoring and Evaluation of Resistance
AMR	Antimicrobial resistance
CDC	United States Centers for Disease Control and Prevention
cMYP	Comprehensive multiyear plans
DHMT	District Health Management Team
DSD	Disease Surveillance Department/GHS
EVD	Ebola virus disease
ECOWAS	Economic Community of West African States
EOC	Emergency Operations Centre
EPA	Environmental Protection Agency
EPI	Expanded Programme on Immunization
EQC	External Quality Control
EVD	Ebola Virus Disease
FAO	Food and Agriculture Organization of the United Nations
FDA	Food And Drugs Authority Ghana
FETP	Field Epidemiology Training Programme
GAEC	Ghana Atomic Energy Commission
GAF	Ghana Armed Forces
GFEELTP	Ghana Field Epidemiology and Laboratory Training Program
GHS	Ghana Health Service
GIS	Geographic Information Systems
GMO	Genetically-modified Organisms
GOARN	Global Outbreak and Alert Response Network
HCAI	Health Care-Associated Infection
IAEA	International Atomic Energy Agency
IATA	International Air Transport Association
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IMF	International Monetary Fund
INFOSAN	International Food Safety Authorities Network
IPC	Infection, prevention, control
IPV	Inactivated poliovirus
IQC	Internal quality control

KCCR	Kumasi Centre for Collaborative Research in Tropical Medicine
KIA	Kotoka International Airport
LI	Legislative Instrument
MCM	Medical countermeasures
MoH	Ministry of Health
MoU	Memorandum of Understanding
NADMO	National Disaster Management Organisation
NACP	National AIDS Control Programme
NMCP	National Malaria Control Programme
NCC	National Coordinating Committee
NFP	National Focal Point (IHR)
NGO	Nongovernmental Organization
NMIMR	Noguchi Memorial Institute for Medical Research
NRA	Nuclear Regulatory Authority
NTCC	National Technical Coordinating Committee
NTP	National Tuberculosis Control Programme
OIE	World Organisation for Animal Health
PHEIC	Public health emergency of international concern
PoE	Points of Entry
PVS	Performance of Veterinary Services (tool)
QMS	Quality Management System
RRT	Rapid response team
SARS	Severe Acute Respiratory Syndrome
SLIPTA	Stepwise Laboratory Quality Improvement Process Towards Accreditation
SLMTA	Strengthening Laboratory Management Toward Accreditation
SOP	Standard operating procedure
TB	Tuberculosis
THIRA	Threat Hazards Identification Risk Assessment
TWG	Technical working group
UNICEF	United Nations Children's Fund
VSD	Veterinary Services Directorate
WHO	World Health Organization

Executive summary

Background

Since June 2007, countries have been putting in place efforts to strengthen their International Health Regulations (2005) (IHR) core capacities. Under Article 54 of the IHR (2005), countries were self-reporting annually their implementation status to the World Health Assembly. To strengthen the long-term assessment and development of IHR core capacities, WHO developed the IHR Monitoring and Evaluation Framework (MEF) which includes four components: Annual reporting (self-assessment), Joint External Evaluations (JEE), Simulation exercises and After action reviews. A JEE evaluation was conducted in Ghana from 6 to 10 February, 2017 in Accra Ghana. External subject matter experts facilitated the validation of the self-assessment report and scores previously reported by multi-sectoral and multidisciplinary stakeholders in Ghana. The external experts were from the following organizations: WHO (Headquarters and Regional Office), the United States Centers for Disease Prevention and Control (US CDC), the Norwegian Institute of Public Health, the German Development Cooperation (GIZ), the Japanese Development Cooperation (JICA), the Food and Agriculture Organization of the United Nations (FAO). Here we present a summary of Ghana's overarching issues and the immediate next steps.

Findings from the Joint External Evaluation

Ghana's best practices and strengths

Relevant supporting laws and legislation exist, including: the Public Health Act 2012, the Biosafety Act, and regulatory frameworks for chemical and radiation events. The IHR national focal point (NFP) is well positioned in the Disease Surveillance Department (DSD) of the Ghana Health Service with authority to communicate directly with WHO. There is an IHR coordination, communication and advocacy mechanism at national, regional and district level, including the National Coordination Committee (NCC), the National Technical Coordination Committee (NTCC), the Public Health Division (PHD), the Regional Public Health Emergency Management Committees (RPHEMCs) and the District Public Health Emergency Management Committees (DPHEMCs). However, the operations of these bodies needs to be streamlined with the public health emergency operation centre (PHEOC) operations.

Although not fully formalised, there is collaboration between public health, animal health and security authorities. With respect to antimicrobial resistance (AMR), technical capability for AMR surveillance exists at the teaching hospitals and the regional hospital laboratories. In addition, designated laboratories are conducting detection and reporting of some priority AMR pathogens.

The immunization programme in human health is robust with high nationwide coverage that can support the rapid delivery of emergency vaccination for vaccine preventable diseases (VPDs):

The Food and Drugs Authority Ghana (FDA), which is responsible for food safety, and is the designated focal point for the International Network of Food Safety Authorities (INFOSAN), has established a regulatory food control system especially for food producers that produce pre-packaged foods. Moreover, training and educational materials are available for foodborne disease outbreak investigations.

The national zoonotic surveillance system includes several priority diseases and several regional laboratories (Accra, Tamale and Takoradi) have the capacity to test for some zoonotic diseases.

A national laboratory system exists for both human and animal health with linkages to research institutions and supranational laboratories. In addition, specific disease programmes, including: the vaccine preventable diseases (measles, polio, meningococcal meningitis), flu, HIV and TB have vertical specimen referral within the laboratory network. Importantly, several disease programmes including TB, malaria, seasonal flu,

meningococcal meningitis and HIV are aligned to the WHO standards. Further, there are standard operating procedures (SOPs) for the collection, packaging and transportation of laboratory specimens.

With respect to the health workforce for health security, there is a health workforce strategy/programme and multidisciplinary human resource capacity (epidemiologists, veterinarians, clinicians and laboratory specialists or technicians) is available at the national level and in some of the regions. National and regional level rapid response teams have been identified and trained. Commendably, the field epidemiology training programme (FETP) is robust, mature and includes veterinarians.

The surveillance system in human health incorporates indicator, syndromic and event-based surveillance. The Integrated Disease Surveillance and Response (IDSR) programme is well utilized and implemented and surveillance structure in place at all levels, with community based surveillance implemented for major priority diseases/conditions and unusual health events. Routine reporting indicators have been assigned as performance indicators for health directors to achieve as part of monitoring of the effectiveness of the system.

A national public health emergency preparedness and response plan exists and a multi-hazard plan based on a whole of society approach and covers the IHR core capacity requirements (1A Article 2) has been developed. Importantly, a comprehensive public health risk assessment and capacity mapping was conducted in 2016 which outlines preparedness needs and recommended actions.

Capacity (human resources/logistics) exists for the deployment of medical counter measures and personnel and this was demonstrated during the Ebola Virus Disease (EVD) outbreak.

There is outstanding collaboration and positive attitude among Ghana Civil Aviation Authority, the Ghana Airports Company Limited and the Port Health Unit at Kotoka International Airport (KAI) and is there evidence of joint exercises and day-to-day duties.

Priority areas/areas that need improvement

The government of Ghana will have to ensure that there is a national budget line for sustained funding, logistics, and human resources to support IHR implementation. Importantly there will be a need to validate the national public health and emergency preparedness and response plan using the national Threat Hazards Identification Risk Assessment (THIRA) tool. WHO completed the THIRA at the end of April 2016, however the results of the assessment were not available at the time of the mission. Further it will be important to periodically conduct simulation exercises and after action reviews to test the functionality and resilience of structures, systems and procedures. Moreover, implementation of the national action plan for health security should be underpinned on the one health approach, with alignment with broader health systems strengthening plans and using a whole of government approach.

In order to ensure that there is a good supporting environment, it will be critical to fast-track the finalization of the legislative instruments to facilitate the implementation of the public health Act 2012, amend the Biosafety Act to make it comprehensive beyond genetically modified organisms (GMO). It will also be important to promulgate new laws for biosecurity, and to institute a framework to support the deployment of medical counter measures (MCM) and personnel during emergencies as well as amend laws to support radiation and chemical events national planning.

To streamline coordination, Ghana is advised to formalise, institutionalize and capacitate the IHR NFP and ensure that there are robust mechanisms for coordination, communication and advocacy for IHR at all levels.

Another critical area is to improve laboratory capacity and logistics for AMR surveillance; standardization of the methodology for AMR susceptibility testing and the creation of the capacity to validate AMR testing data.

In order to improve early detection, Ghana needs to strengthen the public health laboratory system (particularly national public health laboratory and specimen submission system); sensitize relevant hazard specific groups and the regional surveillance staff on the use of annex 2 of the IHR for risk assessment.

To improve response capacity, Ghana needs to conduct a logistics system review and utilize the public health risk assessment to preposition supplies and equipment to high risk areas. A critical response capacity that needs urgent action is to streamline at national level, the location and operations of the PHEOC with a clear Emergency Operations Centre (EOC) plan, procedures, and incident management system and to strengthen rapid response teams (RRTs) at sub-national level to ensure adequate surge capacity to respond to public health emergencies of national and international concern. Moving forward, it will be critical to address frequent stock out of laboratory commodities or supplies to ensure sufficient diagnostics are available. Further, there is a need to raise political commitment to facilitate the development and implementation of national plans with proper mechanisms for sending and receiving medical countermeasures and health personnel. Drawing lessons from the experience of EVD response, Ghana can quickly strengthen capacity for deployment of MCM through the expansion of the scope from EVD-focused approach to multi-hazard approach.

In terms of workforce capacity building, there will be a need to strengthen and scale up the field epidemiology training (particularly FETP Frontline) to increase the capacity and capability to do outbreak-investigations. This should be complimented by joint training programs under the One Health approach for all relevant sectors, including: points of entry, security and law enforcement agencies.

Event-based surveillance was noted to have short comings and it will be important to strengthen Event-Based Surveillance through the provision of SOPs and training of all health workers at all levels. For animal health syndromic surveillance was non-existent and a key urgent action is to support the establishment of syndromic surveillance in animal health.

The JEE has also demonstrated that the PHEOC is in foundational stages and requires further support from the Ghana Health Service (GHS) and the NCC and NTCC to fully maximize its potential to respond in public health emergencies. We advise that a study tour is conducted to countries with robust PHEOC like Liberia or Sierra Leone and seek technical assistance to set up robust PHEOC.

With respect to chemical and radiation events, the JEE proposes the development of hazard specific emergency preparedness and response plans for chemical and radiation events that stipulates the roles and responsibilities of stakeholders, and this should be a part of the national action plan for health security. Following the development of the hazard specific plans, strengthen capacity for surveillance and response to chemical events, intoxication, including laboratory capacity; Strengthen and Institutionalize information sharing across sectors and agencies; review the NNRER plan to make it comprehensive and take into consideration recent development and the JEE findings. Finally, it will be critical to institutionalize information exchange and reporting between radiological authorities and other relevant sectors, GHS, veterinary health services and environmental health.

Immediate next steps

Following the finalization of the JEE report, Ghana should widely disseminate the findings to national and international stakeholders and update and cost national action plan for health security, preferably in the third or fourth quarters of 2017.

Ghana's 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 detection	1
	P.3.2 Surveillance of infections caused by antimicrobial-resistant 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	3
	P.4.2 Veterinary or animal health workforce	3
	P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional	3
Food safety	P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases	2
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	4
	P.7.2 National vaccine access and delivery	3
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	3
	D.1.2 Specimen referral and transport system	2
	D.1.3 Effective modern point-of-care and laboratory-based diagnostics	2
	D.1.4 Laboratory quality system	2
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	3
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	2
	D.2.3 Integration and analysis of surveillance data	3
	D.2.4 Syndromic surveillance systems	3
Reporting	D.3.1 System for efficient reporting to FAO, OIE and WHO	3
	D.3.2 Reporting network and protocols in country	2
Workforce development	D.4.1 Human resources available to implement IHR core capacity requirements	2
	D.4.2 FETP ¹ or other applied epidemiology training programme in place	4
	D.4.3 Workforce strategy	2
Preparedness	R.1.1 National multi-hazard public health emergency preparedness and response plan is developed and implemented	2
	R.1.2 Priority public health risks and resources are mapped and utilized	2

¹ FETP: Field epidemiology training programme

Emergency response operations	R.2.1 Capacity to activate emergency operations	1
	R.2.2 EOC operating procedures and plans	1
	R.2.3 Emergency operations programme	2
	R.2.4 Case management procedures 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	2
Medical countermeasures and personnel deployment	R.4.1 System in place for sending and receiving medical countermeasures during a public health emergency	1
	R.4.2 System in place for sending and receiving health personnel during a public health emergency	1
Risk communication	R.5.1 Risk communication systems (plans, mechanisms, etc.)	2
	R.5.2 Internal and partner communication and coordination	3
	R.5.3 Public communication	3
	R.5.4 Communication engagement with affected communities	2
	R.5.5 Dynamic listening and rumour management	2
Points of entry	PoE.1 Routine capacities established at points of entry	3
	PoE.2 Effective public health response at points of entry	2
Chemical events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	2
	CE.2 Enabling environment in place for management of chemical events	2
Radiation emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	2
	RE.2 Enabling environment in place for management of radiation emergencies	3

Note on scoring of technical areas of the JEE tool

The JEE process is a peer-to-peer review and a collaborative effort between host country experts and JEE 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 onsite visit with the JEE team. The entire external evaluation, including the discussions around the score, strengths/best practices, the areas that need strengthening, challenges and the priority actions, is done in a collaborative manner, with the JEE team members and host country experts seeking agreement.

Should there be significant and irreconcilable disagreement between the JEE team members and the host country experts, or among the JEE team, or among the host country experts, the JEE 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 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 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 (2005) 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

States Parties should have an adequate legal framework to support and enable the implementation of all of their obligations and rights to comply with and implement the IHR (2005). In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even where new or revised legislation may not be specifically required under the State Party's legal system, States may still choose to 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 (2005) implementation through the national budget or other mechanisms.

Ghana's Level of Capabilities

The Government of Ghana has a satisfactory legal framework to support and enable the implementation of IHR (2005). The Government of Ghana has conducted an assessment of all the existing regulations, legislative instruments, policies or other government instruments in human, animal and environmental health that are needed to support the implementation of IHR (2005). It has identified the laws and regulations that require new or modified legislation, regulations or other legal instruments in order to facilitate the full implementation of IHR (2005). Ghana scored 75% in the IHR (2005) self-monitoring tool for the period 2013 to 2015. Existing regulatory frameworks include: the Economic Community of West African States (ECOWAS) protocols on health (1975), the Public Health Act, 2012 (Act 851), the Ordinance (Laws of Gold Coast, 1951); the Mosquitoes Ordinance, 1911 (Cap 75); the Vaccination Act, 1919 (Cap 76); the Quarantine Act, 1915 (Cap 77); the Infectious Diseases Act, 1908 (Cap 78); and the Mining Health Areas Act, 1925 (Cap 150).

Recommendations for Priority Actions

- Establish an emergency fund, with a clear mechanism for accessing the fund in the case of an emergency, clear guidance on triggers for release of funds and monitoring and accountability processes for implementation and utilization of funds.
- Fast track the development and approval of the remaining six legal instruments after the enactment of the Public Health Act, 2012 (Act 851).

- Review the legal and regulatory frameworks such as Veterinary Services Act, 2002 (Cap 437); Community Water and Sanitation Act 1998 (Act 564), and other regulations governing IHR (2005) hazards to ensure complementarity with the Public Health Act, 2012 (Act 851).

Indicators and Scores

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

Strengths/best practices

Ghana is a signatory to the IHR (2005). A fully operational Integrated Disease Surveillance and Response (IDSR) strategy is being implemented for building IHR (2005) core capacities. There is legislation and other government instruments governing public health surveillance and response. The IHR (2005) has been included fully as the 7th Schedule of the Public Health Act, 2012 (Act 851).

Areas that need strengthening/challenges

There is a need to complete the development of legal instruments after the adoption of the Public Health Act, 2012 (Act 851). In addition Ghana needs to develop and disseminate a national policy and strategy defining the implementation structures, roles, responsibilities and organization at all levels in the implementation of IHR (2005). Moreover, the development of an action plan will be critical to support resource mobilization to facilitate the implementation of IHR (2005) core capacities. Importantly there is a need for a specific budget line for the implementation of IHR (2005). This should be aligned within the overall national budgeting cycles, such as Ghana's medium-term expenditure frameworks.

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

There is political will for IHR (2005) implementation. The need for adjustment and aligning were duly considered in the enactment of the Public Health Act (Act 851). Other relevant instruments in various sectors in support of IHR (2005) implementation include: the Animals (Control of Importation) Act, No. 36 of 1952 and the Diseases of Animals Act, 1961 (Act 83), Environmental Protection Agency Act, 1994 (Act 490); these will need to be updated to include priorities and concerns associated with public health threats in the 21st century (such as biosecurity):

Areas that need strengthening/challenges

- Further development of legal instruments after the passing of the Public Health Act, 2012 (Act 851) is required.
- A national policy and strategy defining implementation structures, roles, responsibilities and organization at all levels in the implementation of IHR (2005) needs to be developed and disseminated.
- An action plan for IHR (2005) implementation should be developed to mobilize funds, which includes a specific budget line for the implementation of IHR (2005) within the national budget.
- Reduction of bureaucratic "red tape" in the approval processes is a challenge, as are the unavailability of legal instruments emanating from the Public Health Act, 2012 (Act 851) and importantly low awareness of the importance of the IHR (2005).

IHR Coordination, Communication and Advocacy

Introduction

The effective implementation of the IHR (2005) requires multisectoral/multidisciplinary approaches through national partnerships for effective alert and response systems. Coordination of nation-wide resources, including the designation of an IHR National Focal Point (NFP), which is a national centre for IHR communications, is a key requisite for IHR implementation.

In Ghana, the Disease Surveillance Department of Ghana Health Service is the designated NFP.

Target

The NFP should be accessible at all times to communicate with the WHO IHR Regional Contact Points and with all relevant sectors and other stakeholders in the country. States Parties should provide WHO with contact details of NFPs, continuously update and annually confirm them.

Ghana's Level of Capabilities

There is a coordination mechanism within the relevant ministries and sectors on events that may constitute a public health event or risk of national or international concern. The National Technical Coordinating Committee (NTCC) is a multi-stakeholder technical body that facilitates this process by convening meetings of relevant stakeholders to share information; among these stakeholders is the National Coordinating Committee (NCC), also interministerial, which is able to give necessary directives. The NTCC is multidisciplinary and provides the NCC with expert advice. The terms of reference of both the NTCC and NCC need to be reviewed. There are guidelines for coordination between the IHR NFP and all institutions that were part of the IHR Steering Committee meeting that occurred in March 2013 (discussed in the Steering Committee meeting presentation; see “relevant documentation” in Annex 3). There is a mechanism for timely and systematic information exchange between animal surveillance units, laboratories, human health surveillance units and other relevant sectors regarding potential zoonotic risks events through routine reporting and quarterly stakeholder meetings.

There is consistent use of Integrated Disease Surveillance and Response (IDSR) to implement IHR. In addition Ghana uses the IHR as a rallying point to foster collaboration with other stakeholders, and Steering Committee members serve as contact points for implementation of IHR and sharing surveillance information among IHR NFPs and dissemination to relevant programme areas.

One area that could enhance information sharing and advocacy for IHR is the website www.ihrghana.org. However, presently, the website is not widely used. Posting reports to the website may improve and help to formalize report sharing which is acknowledged as a gap. An information and advocacy package has been developed but not disseminated; the website may be a method for dissemination. The IHR NFP is located within the Ministry of Health (MoH) leading to heavy emphasis on and ownership by the MoH. Other stakeholders such as the Ministry of Environment, Science, Technology and Innovation and to a limited extent Ministry of Food and Agriculture (to which the Veterinary Services Directorate belongs) fall behind in their responsibilities under the IHR (2005).

Recommendations for Priority Actions

- Strengthen the IHR NFP to perform core functions and capacitate the NFP to be accessible continuously for communication and other support.
- Complete the tasks necessary to fully establish IHR (2005) core capacities (the original deadline of June 2016 was missed).
- Improve timeliness and systematic nature of reporting and institutionalize or formalize report-sharing mechanisms among stakeholders.
- Proactively engage other non-health sector stakeholders in the planning and implementation of the IHR to foster ownership and implementation underpinned by the One Health approach.

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 2

Strengths/best practices

- The designation of someone at the Disease Surveillance Department of the Ghana Health Service (GHS) as the IHR NFP.
- The availability of the IHR Steering Committee, NTCC, Emergency Operations Centre (EOC) and the National Disaster Management Organisation (NADMO) platforms to reach relevant stakeholders.
- The multidisciplinary NTCC exists to prepare for and implement response to national public health emergencies.
- A multisectoral and multidisciplinary disease epidemic technical advisory committee, also exists under NADMO and can coordinate response to national disasters and emergencies.

Areas that need strengthening/challenges

While there are guidelines for coordination within relevant ministries on events that may constitute a public health event or risk of national or international concern, no operational communication has been established between the IHR NFP and other relevant ministries. Communications occur on interpersonal levels and via ad hoc or unofficial channels. Further, information regarding obligations or duties under the IHR has not been disseminated to national authorities and stakeholders.

There is a need for improved timeliness and systematic reporting from districts to regional and national levels.

In addition, there is a need to conduct an evaluation of key functions of the IHR NFP for effectiveness and to clearly define roles and responsibilities for national authorities and stakeholders. This includes completing the certification to fully establish all the IHR core capacities in Ghana, which was missed in June 2016.

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. The evolution of antimicrobial resistance (AMR) is occurring 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 being coordinated by WHO, FAO, and OIE to develop an integrated and global package of activities to combat antimicrobial resistance, spanning human, animal, agricultural, food and environmental aspects (i.e. a one-health approach), including: a) Each country has its own national comprehensive plan to combat antimicrobial resistance; b) Strengthen surveillance and laboratory capacity at the national and international level following agreed international standards developed in the framework of the Global Action Plan, considering existing standards and; c) 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.

Ghana's Level of Capabilities

Ghana has not established a national action plan for combatting AMR. However, a national AMR policy has been drafted (but not yet ratified), which includes statements on detection, surveillance, infection prevention and control (IPC), and stewardships. Fortunately the draft AMR policy is designed and developed according to the One Health approach. The policy also includes a plan for detection of resistance in priority pathogens at designated laboratories. Initial steps for detection of AMR in Ghana also include a project entitled "Antibiotic Drug Use Monitoring and Evaluation of Resistance" (ADMER). This project is increasing the AMR capacity in Ghana by producing thus far 16 new staff – six with PhDs and 10 Masters of Philosophy (M Phil). Currently select universities and the MoH are working on the ADMER project; the work so far done constitutes the baseline of data currently found in Ghana on this topic. Furthermore the policy and strategy on IPC has been updated and training is ongoing across the country. This approach needs to be scaled up to the private sector and community levels across the country, so capacity can be further strengthened.

The Public Health Act, 2012 (Act 851) requires that antibiotics in humans only be sold with a prescription. Similarly, antibiotics should not be sold for use in animals without a prescription. This does not preclude accessing antibiotics illegally; enforcement of laws preventing and punishing such use however needs to be strengthened. The National Regulatory Agency ensures the quality, safety and efficacy of antimicrobial agents in Ghana.

Recommendations for Priority Actions

- Develop and adopt a national action plan for AMR.
- Strengthen laboratory services for AMR including designation of sentinel sites for AMR.

- Implement IPC guidelines.
- Ratify the draft AMR policy.

Indicators and Scores

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

Strengths/best practices

- There is political will for dealing with AMR.
- The technical capability of teaching hospitals and regional hospital laboratories to detect AMR is present.
- Designated laboratories are conducting detection and reporting of some priority AMR pathogens.
- Bacterial culture and sensitivity testing are done in regional hospitals and teaching hospitals.

Areas that need strengthening/challenges

- Laboratory capacity needs to be strengthened.
- Logistics for surveillance activities needs to be implemented.
- Methodology for AMR susceptibility testing should be standardized.
- There is limited capacity to validate testing data.

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

Strengths/best practices

- Political will is established.
- There is some laboratory capacity to detect AMR, which is the baseline for laboratory capacity.
- Public health reference laboratories are conducting surveillance on a few antimicrobial agents for public health (HIV/AIDS, TB, malaria), supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria.
- Sentinel sites are conducting surveillance of some pathogens of public health importance in Ghana, supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria.

Areas that need strengthening/challenges

- Logistics for surveillance activities is needed.
- Methodology for AMR susceptibility testing should be standardized.
- Data on AMR for laboratory and use by national stakeholders should be generated.

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

Strengths/best practices

- An IPC policy and strategy are available.
- SOPs and guidelines for IPC are available.
- There are designated IPC professionals in all tertiary and major hospitals.

Areas that need strengthening/challenges

- Capacity for IPC needs to be strengthened (including logistics)
- Use of SOPs and guidelines at the facility level are needed.

- System to monitor and evaluate the effectiveness of IPC activities and publish results is required.
- Human resources capacity is limited.

P.3.4 Antimicrobial stewardship activities – Score 1

Strengths/best practices

- Political will is established.
- An AMR policy and strategy has been established (but not yet ratified).
- A baseline for laboratory capacity to detect AMR exists.
- Public Health Act, 2012 (ACT 851) requires that a prescription be shown before antibiotics are dispensed.

Areas that need strengthening/challenges

- Training and capacity for health and veterinary workers on rational and responsible use of antimicrobials needs to be strengthened.
- More research into AMR should be conducted.
- Establish more sentinel sites for the surveillance and use of antimicrobials and resistance.
- Enforce existing laws on access to antimicrobial agents.

Zoonotic Diseases

Introduction

Zoonotic diseases are communicable diseases and microbes spreading between animals and humans. These diseases are caused by bacteria, viruses, parasites, and fungi that are carried by animals and insect or inanimate vectors may be needed to transfer the microbe. Approximately 75% of recently emerging infectious diseases affecting humans is of animal origin; approximately 60% of all human pathogens are zoonotic.

Target

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

Ghana's Level of Capabilities

More than half of emerging diseases in humans is zoonotic. It is likely that zoonotic diseases will continue to emerge in areas where human population is dense and biodiversity is high, as in parts of Ghana. The diverse ecosystems in Ghana facilitate the human–animal interface and predispose humans and animals to be at risk for zoonotic diseases. Ghana has identified six zoonotic diseases of particular interest: avian influenza, rabies, brucellosis, bovine tuberculosis, cysticercosis and anthrax.

The following six potential zoonotic diseases in humans are reported weekly through the national IDSR system: acute haemorrhagic fever syndrome, yellow fever, anthrax, plague, rabies and severe acute respiratory syndrome (SARS). Potential zoonotic diseases in animals are also reported intermittently to the Veterinary Services Directorate (VSD), part of the Ministry of Food and Agriculture. Neither event-based nor syndromic surveillance is well established in the animal health sector. Ghana's military is also involved in zoonoses surveillance, via military-managed sentinel sites. When issues arise, the military shares information with the public health and animal sectors.

A number of agencies are involved in zoonotic disease-related issues including the Ghana Health Service, the Food and Drugs Authority Ghana (FDA), the Wildlife Division (part of the Ministry of Lands and Natural Resources) and VSD. It was pointed out during the plenary of the JEE meeting that there is no formal channel between the public health and animal sectors to share information or collaborate – indeed the presentation on the zoonoses technical area only contained information from the animal sector.

When a zoonotic disease outbreak is reported, joint outbreak investigations from both sectors may be undertaken but there is no formal policy, strategy or plan for responding to zoonotic outbreaks. Training for outbreak investigations, including for zoonotic disease outbreaks, are conducted when resources are available. Veterinarians participate in the Ghana Field Epidemiology and Laboratory Training Program (GFELETP). There is also regular training available for veterinarians on meat inspection (i.e. determining bovine tuberculosis and cysticercosis and other zoonotic diseases in slaughter-houses).

Recommendations for Priority Actions

- Recruit additional staff to enable appropriate outbreak investigations and disease control activities.
- Enhance surveillance and outbreak response by coordination and information-exchange between GHS and VSD through a formal communication channel.

- Strengthen the national laboratory system to enhance the surveillance for zoonotic diseases.

Indicators and Scores

P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens – Score 3

Strengths/best practices

- National surveillance system includes several zoonotic diseases.
- Several regional veterinary laboratories (i.e. Accra, Tamale and Takoradi) have capacity to test for some zoonotic diseases.
- The GFEELTP includes veterinarians.
- National surveillance system includes timely reporting at all surveillance reporting levels.
- Investigations of zoonotic disease outbreaks have included multisectorial teams.
- Investigations of zoonotic disease outbreaks have included laboratory confirmation, based on laboratory diagnostic guidelines written for that purpose.

Areas that need strengthening/challenges

- Sharing of surveillance data between animal and human health sectors needs to be formalized.
- Sharing of specimens/strains and reports between public health and animal health laboratories needs to be strengthened.
- Interagency multisectoral rapid response teams (RRTs) in disease outbreak management are needed.
- IHR focal point does not receive timely data on zoonotic diseases that can then be forwarded to the Public Health Division of GHS.

P.4.2 Veterinary or Animal Health Workforce – Score 3

Strengths/best practices

- The Food Safety Division (within the FDA) was created in 2009 with a focus on zoonosis prevention and control.
- The GFEELTP includes veterinarians.
- There is one college in Ghana that offers training for Veterinary Technicians.
- There is one university (University of Development Studies) with training for veterinary nurses.
- There are two universities (University of Ghana, Legon and Kwame Nkrumah University of Science and Technology, KNUST) with veterinary schools graduating veterinarians.
- Public Health Division is aligned with the One Health approach.
- Epidemiology and laboratory training conforms to international standards and are available for all categories of staff.

Areas that need strengthening/challenges

- There is a shortage of veterinarians in public health.
- Absence of census to verify animal population figures. Animal Population census figures have been based on projections since 1996.
- There is poor collaboration between epidemiology, laboratory, public health and veterinary services.

- There is a prohibition on recruitment of Animal Health Specialists into public service, imposed by the International Monetary Fund (IMF).
- There are too few specialized veterinary staff at regional and lower levels.

P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional – Score 3

Strengths/best practices

- The “National Integrated Strategic Plan for PHEIC 2015-2019” has been drafted, but is awaiting finalization and adoption by all relevant ministries.
- Zoonotic diseases constitute part of VSD’s list of priority diseases.
- The country has trained national, regional and district multidisciplinary RRTs that include animal health partners.
- There is support from local government during outbreaks.
- Roles and responsibilities of animal health, human health and wildlife sectors are clearly defined:
 - Animal health investigates the outbreak of all zoonotic diseases (sampling, specimen transportation, testing, depopulation and decontamination);
 - Human health conducts screening of all humans coming in contact with suspected animals (including contact tracing and surveillance); and
 - Wildlife conducts surveillance of zoonotic diseases.
- There are contingency funds set aside for emergency outbreak situations.

Areas that need strengthening/challenges

- The “National Integrated Strategic Plan for PHEIC 2015-2019” is awaiting ratification by the relevant ministries.
- Completion of Legislative Instrument of the public health Act, 2012 (Act 851)
- Build capacity of qualified staff in specialized areas (public health, laboratory and epidemiology)
- There is inadequate capacity and supplies, e.g. logistics, consumables, vehicles, motorbikes, PPE, etc.

Food Safety

Introduction

Food and waterborne 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

State parties should have surveillance and response capacity for food and waterborne diseases' risk or events. It requires effective communication and collaboration among the sectors responsible for food safety and safe water and sanitation.

Ghana's Level of Capabilities

The Food and Drugs Authority Ghana (FDA) of the Ministry of Health is responsible for food safety under the Public Health Act, 2012 (Act 851). Additional agencies involved with food safety include: the Ghana Tourism Authority; Metropolitan, Municipal and District Assemblies; Ghana Standards Authority; Environmental Protection Agency; Plant Protection and Regulatory Services Directorate; Fisheries Commission; and the Veterinary Services Directorate. The FDA has drafted a national food safety plan, but the plan has not been ratified. It has also implemented food control systems, particularly in food facilities producing pre-packaged foods. The FDA serves as the International Food Safety Authorities Network (INFOSAN) focal point for Ghana.

Ghana has a structured food inspection system especially for manufacturing and importation of Pre-packaged foods. The FDA has authority over meat inspection but there is minimal oversight in the largest slaughter-houses in the capital area. Outside the capital, if animals are slaughtered for meat in a facility, the facility is typically not inspected and generally has minimal access to running water and appropriate waste disposal products.

Public health surveillance for cholera and dysentery, which may be foodborne, is included in the national Integrated Disease Surveillance and Response (IDS) system. There is no formal system, however, for reporting foodborne outbreaks specifically. When foodborne outbreaks are detected, the FDA participates in the field investigations; such outbreak investigations are commonly multisectoral, particularly in areas around Accra. However, there is no system of rapid information exchange during suspected foodborne outbreaks, and between focal points for food safety. The FDA has developed a manual and conducts training on foodborne disease investigations. However, there is limited laboratory capacity to support foodborne outbreak investigations through testing of specimens from humans, food or the environment.

The FDA provides food safety information to stakeholders across the "farm-to-fork" continuum including to food manufacturers, restaurants, caterers and veterinary services. The FDA also conducts risk profiling of food safety problems to help identify opportunities for authorities to implement appropriate risk management strategies.

There was a good deal of discussion about the score of the indicator in this technical area. It was noted during the plenary session of the JEE assessment that while identification of foodborne outbreaks is not currently routine, Ghana has conducted outbreak investigations, for example, during a cholera outbreak in Accra. It was also noted that elements of routine investigations are included in the GFEITP, as further justification for a score of 3. Another colleague countered the argument, suggesting investigations were not routine. By way of evidence he noted that the FDA had developed a "foodborne disease surveillance system", which was recently pilot-tested in one of the districts in greater Accra and will be rolled out. Once operational, this system would enable Ghana's health authorities to conduct routine investigations of foodborne outbreaks and analyse and share data. As it does not yet exist in practice, he suggested the score be kept at 2. The majority of the colleagues from Ghana agreed, with the caveat that this information be added to the report.

Recommendations for Priority Actions

- Adopt and implement national food safety plan.
- Enhance national public health surveillance to include outbreaks of foodborne diseases, and increase laboratory support for foodborne outbreak investigations (microbiological pathogens and chemicals).
- Improve the quality of foodborne disease outbreak investigations by increased training, improved collaboration and increased sharing of information, with the goal of routine investigation of foodborne outbreaks and sustainable collaboration between sectors.

Indicators and Scores

P.5.1 Mechanisms are established and functioning for detecting and responding to foodborne disease and food contamination – Score 2

Strengths/ Best Practices

- The FDA is responsible for food safety and is the designated INFOSAN focal point.
- The FDA has established a food control system, especially for food producers that produce pre-packaged foods.
- National surveillance is conducted for cholera and dysentery, diseases that are commonly foodborne.
- Training and educational materials are available for foodborne disease outbreak investigations.

Areas that need strengthening/challenges

- Enhance national surveillance system to ensure outbreaks of foodborne diseases are captured.
- Enhance training of foodborne disease investigations.
- Increase laboratory capacity to include testing of specimens from humans and food in support of outbreak investigations.
- Improve collaboration and clarify roles and responsibilities between public health partners involved in food safety, including information sharing on foodborne disease outbreaks.

Biosafety and Biosecurity

Introduction

Working with pathogens in the laboratory is vital to ensuring that the global community possess 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 disease 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 is in place, ensuring that especially dangerous pathogens are identified, held, secured and monitored in a minimal number of facilities according to best practices; biological risk management training and educational outreach are 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 are in place as appropriate.

Ghana's Level of Capabilities

The recent Ebola Virus Disease (EVD) outbreak in West Africa has highlighted the need to enforce stricter biosafety and biosecurity measures and Ghana is advancing in this area due to its use of the One Health approach. Countrywide laboratory accreditation is a very important topic that needs strengthening in Ghana. In addition, insufficient IPC for isolation/holding/treatment centres for dangerous pathogens pose significant biological risks for the spread of disease.

Ghana implemented the Biosafety Act in 2011 (Act 831), which regulates biotechnology and related matters. However, it ensures safe handling and use only of genetically modified organisms (GMOs) resulting from biotechnology that may have an adverse effect on health and the environment, and not on pathogens in general. It is important that the three biosafety-level 3 (BSL3) flagship laboratories – Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR), Noguchi Memorial Institute for Medical Research (NMIMR) and a laboratory managed by the Veterinary Services Directorate (VSD) work more closely together and harmonize methods.

Recommendations for Priority Actions

- Amend the Biosafety Act, 2011 (ACT 831) to expand its scope to cover all pathogens (not only GMOs).
- Institute licensing and inspections for all laboratories (especially clinical private laboratories) by the Health Facility Regulatory Agency with clear information on safety and security requirements.
- Promulgate a law to address biosecurity that is sufficiently funded to support biosafety and biosecurity.
- Strengthen the oversight and enforcement mechanisms for biosafety and biosecurity programmes/initiatives.

Indicators and Scores

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

Strengths/ Best Practices

- Ghana has biosafety legislation, regulations, national guidelines and frameworks in place.
- A previous FAO biosecurity assessment provides a detailed study of Ghana's capacity to inform the way forward on biosecurity legislation on practices.
- There are BSL-3 facilities at NMIMR, KCCR and VSD in line with international standards (though these are not internationally accredited).
- Recent audits on biosafety have been conducted.
- Periodic biosafety (and biosecurity) training for institutional laboratory staff is conducted.
- Transportation security is available and biological specimens packed in accordance to International Air Transport Association (IATA) standards by certified staff; NMIMR and KCCR have access control mechanisms for pathogens of security concern.
- NMIMR and KCCR have manuals, SOPs and records on biosafety and biosecurity.
- One veterinary laboratory has modular BSL3 facilities with SOPs, manuals and records on biosafety and biosecurity.
- Regional, zonal and national public health laboratories and clinical labs have biosafety manuals.
- Regional and national public and clinical laboratories have undergone laboratory audits by the African Society for Laboratory Medicine under the WHO/Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA) process.

Areas that need strengthening/challenges

- Active national oversight and enforcement mechanisms are needed for both biosafety and biosecurity.
- Adequate funding is required to comprehensively support the national biosafety and biosecurity system.
- A consolidation plan that outlines the transfer of dangerous pathogens and toxins into a minimum number of facilities should be developed.
- Routine external quality assessments at all laboratories are needed.

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

Strengths/best practices

- Existing training programmes on dangerous pathogens/toxins in place at research institutes or veterinary BSL3 laboratories.
- New BSL3 facilities in Ghana (KCCR, NMIMR, VSD) are planned, including with commitment of resources for operations and maintenance.
- Public/clinical laboratory and research institutions have waste management policies in place.
- Mechanisms to monitor laboratory staff competence under way via a quality management system (QMS) and SLIPTA.
- Academic institutions have training programmes in place for those who work with dangerous pathogens.

Areas that need strengthening/challenges

- Training programmes on dangerous pathogens and toxins needed for the public health and clinical laboratories, including a standardized curriculum for biosafety and biosecurity trainings. An academic course or diploma at universities (e.g. the University of Health and Allied Sciences) could improve the situation.
- There is a lack of national regulations for the transport of infectious substances.
- Ghana lacks a "train-the-trainer" programme for biosafety and biosecurity.
- There is a lack of capacity to ensure proper and timely maintenance of facilities and equipment.

Immunization

Introduction

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

Target

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

Ghana's Level of Capabilities

The immunization programme in Ghana is fairly well developed. Ghana began using the Expanded Programme on Immunization (EPI) in 1978 with six vaccines; today the programme vaccinates against 13 vaccine-preventable diseases. Ghana plans to include inactivated poliovirus (IPV) into the EPI programme in 2017. The EPI programme includes five-year comprehensive multiyear plans (cMYPs) developed with support of partners, which includes routine immunization, outreach activities and supplementary immunization (i.e. "mop up") activities to reach those living in hard-to-reach areas. The current cMYP covers the period 2015–2019, and has been developed in line with the Global Vaccine Action Plan and the African Regional Strategic Plan. Each year annual workplans are developed out of the cMYP.

Recommendations for Priority Actions

- Advocate for secured funding for vaccines and logistics (particularly post-GAVI Alliance funding).
- Install an 80-m² capacity cold room at the national level and also address the cold chain gaps in selected health facilities.
- Build capacity through EPI mid-level management training for district health management teams and immunization in practice for subdistrict and facility staff.
- Strengthen monitoring and supervision at all levels.
- Strengthen communication to improve awareness among the public of the need for vaccinations in the second year of life.

Indicators and Scores

P.7.1 Vaccine coverage (measles) as part of national programme – Score 4

Strengths/best practices

- Immunization is a priority for the Government of Ghana; it is included in the Public health Act 2012 (Act 851) and is integrated with other child health interventions.
- Country's cMYP is aligned with the WHO Global Vaccine Action Plan.
- Ghana has a functional web-based information management system for vaccines.
- The EPI programme has highly motivated staff at all levels, and includes regular regional peer review of data.

- Social media is used to disseminate programme information and receive feedback.
- A screening algorithm to improve vaccine uptake is used at all levels.

Areas that need strengthening/challenges

- Access to immunization services in many hard-to-reach areas (e.g. Volta Basin) and urban and peri-urban areas needs to be strengthened (including capacity to conduct outreach services).
- Data management and use for action
- Implementation of an adverse effects following immunization (AEFI) surveillance system is needed.
- Operational funding for routine immunization from both government and partners is limited.
- There is limited capacity to reach children during the second year of life with vaccines and other child survival interventions.

P.7.2 National vaccine access and delivery – Score 3

Strengths/best practices

- Vaccines in the national programme are provided at no cost to the patient; the Government of Ghana also co-finances those vaccines supported by the GAVI Alliance.
- There is a functional stock control system for vaccines and other EPI logistics available at the national level as well as a trained equipment management team at the national level.
- Vaccine requirements are forecasted annually.
- A District Health Information Management System is used to monitor vaccine utilization at district- and health-facility levels. The system also allows staff to report on the functionality of cold chain equipment at all levels.
- Walk-in cold rooms available at the nation level and in all 10 of Ghana's regions, with 60% of districts having adequate cold chain storage. This includes use of cold chain maintenance forms at all levels.

Areas that need strengthening/challenges

- Cold chain capacity at facility level is only 20%, and the capacity to conduct and pay for maintenance of the cold chain at regional and district level needs to be strengthened.
- The vaccine data reporting system needs to be formalized.
- Delays in co-payment for vaccines have slowed the administration of vaccines to the population.
- A plan needs to be established to manage the financial implications of graduation from GAVI Alliance support.

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.

Ghana's Level of Capabilities

The national laboratory system is advanced; in total there are four public health laboratories and more than 450 clinical laboratories countrywide. Two independent laboratory units operate under the Ghana Health Service (GHS): laboratories of the Public Health Division and of the Institutional Care Division. Those units set national norms and standards, build capacity and monitor services. But accreditation of laboratories and harmonization of methods need strengthening. Other findings indicate the lack of reagents, which need to be imported, as well as a poor specimen referral system.

The debate during the plenary meeting of this technical area was lively. With respect to the discussion of the final indicator of this technical area (lowering the score from 3 to 2), colleagues from Ghana wanted it noted in the report that there is currently no national quality standard for laboratory testing (in fact KCCR and NMIMR have never been asked by either GHS or MoH to register for a national quality standard only external quality schemes). It was suggested that this standard be developed, and further, to make it a statutory requirement for all laboratories in Ghana to adhere to it, which is shown as a priority action.

Recommendations for Priority Actions

- Develop a national specimen referral and transportation system.
- Implement a plan to standardize and harmonize testing methods.
- Establish a sustainable supply of laboratory reagents and methods to procure modern equipment.
- Complete the Strengthening Laboratory Management Toward Accreditation (SLMTA) process as part of an overall quality improvement system, as well as support through international reference laboratories.
- Establish a mechanism for the regulation of laboratory practice in the country.

Indicators and Scores

D.1.1 Laboratory testing for detection of priority diseases – Score 3

Strengths/ Best Practices

- A national diagnostic algorithm for performance of some core laboratory tests is in place.

- Several diseases including tuberculosis (TB), malaria, seasonal influenza, meningococcal meningitis and HIV are aligned to WHO standards.
- Specific disease programmes (influenza, HIV and TB) including vaccine-preventable diseases (measles, polio, meningococcal meningitis) have vertical specimen referral within the laboratory network.
- Standard operating procedures (SOPs) for collection, packaging and transportation of samples are available for diseases under surveillance.
- For the diseases under surveillance or during outbreaks, specimen referral is fully supported by MoH/GHS with no cost to the patient.

Areas that need strengthening/challenges

- Standardization and harmonization of testing is required.
- Memoranda of understanding (MoUs) with international reference laboratories for validation need to be put in place.
- Most district laboratories do not have the equipment for the required/expected tests.
- Documentation of internal quality control (IQC) and participation in external quality control (EQA) needs strengthening.
- Existing SOPs need to be applied routinely.
- Frequent shortages of laboratory supplies are experienced.

D.1.2 Specimen referral and transport system – Score 2

Strengths/best practices

- A system is in place for priority diseases under surveillance. Specimens from the periphery are sent to the districts or regional health directorates, which then forward the specimens to the national reference laboratories.
- SOPs for collection, packaging and transportation of samples are available for diseases under surveillance.
- Data are available proving sample referral for the vertical programmes at the testing sites.
- For some diseases under surveillance or during outbreaks, specimen referral is supported by MoH/GHS with no cost to the patient.
- Sample transportation is available in cases of suspected outbreaks, e.g. for cholera, yellow fever, meningitis, etc.

Areas that need strengthening/challenges

- Specimen referral and transportation system for routine clinical specimens (e.g. sample packaging, transportation options and transmission of results) is required.
- There is no specimen referral network for each of the 10 priority diseases.
- There is inadequate coordination among stakeholders.
- Lack of funding to support specimen referral and the transport system is a challenge.

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

Strengths/best practices

- The MoH has a country procurement process for general laboratory supplies for core laboratories under the National Procurement Act, 2003 (Act 633).

- Programmes such as malaria and HIV as well as other diseases under surveillance have independent donor-funded procurement (US Government, WHO, UNICEF).
- Heightened awareness created by IDSR has contributed to raising the importance of the availability of supplies for performance of core laboratory tests.

Areas that need strengthening/challenges

- There is no in-country production of media, kits and reagents for performance of core laboratory tests.
- The country is heavily dependent on donors to have access to laboratory supplies.
- Frequent stock out of media, reagents and test kits for performance of core laboratory tests is a challenge.

D.1.4 Laboratory Quality System – Score 2

Strengths/ Best Practices

- There is a validation protocol regarding the registration procedure for in vitro diagnostics.
- Laboratory quality audits and support supervision are done with feedback.
- The country has enrolled some laboratories in SLMTA/Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA). Five laboratories have attained a four-star rating.
- There is good collaboration between the National AIDS Control Programme, National Malaria Control Programme and the National Tuberculosis Control Programme, all of which contribute to improving the quality of laboratory systems.

Areas that need strengthening/challenges

- Laboratory accreditation needs to be enforced.
- The national laboratory policy needs to be completed and implemented.
- There is insufficient coordination/collaboration between the human and animal health laboratory systems.

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 bio-surveillance 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 regional capacity to analyse and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems. This can 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 the OIE standards.

Ghana's Level of Capabilities

Note that during the plenary of the meeting on the JEE assessment in Ghana, colleagues from the animal and human health sectors presented their assessments separately, and were scored separately by colleagues from Ghana in the country's self-assessment and by the external experts convened by WHO. However, since the JEE tool allows only for one score per technical areas, the scores given were combined. This technical area, therefore, shows the separate and combined scores. The final overview of Ghana's scores will reflect the combined scores for this technical area.

Human health

Ghana has been using the Integrated Disease Surveillance and Response (IDSR) framework since 1998, which was revised in 2011. Use of the framework has led Ghana to being certified free of guinea worm in 2015, and free of polio since 2008. While IDSR works well in well-populated areas, its effectiveness is limited in remote, hard-to-reach areas. IDSR tracks a list of priority diseases, conditions and events, which are reported as and when they occur; other diseases are reported weekly (through an epidemiological bulletin). Data collected through IDSR relates to human health together with some zoonotic conditions such as human rabies and anthrax; animal health was not included until recently.

Animal health

The animal surveillance system works across all 216 of Ghana's districts, monitoring 28 notifiable diseases of both economic and public health concern; these diseases are reviewed annually at the delegates meeting at the OIE sessions. Data come from both active and passive surveillance. There is a national laboratory that supports confirmation of surveillance samples. A weekly epidemiological bulletin for the animal sector was stopped after external funding ended, but colleagues in Ghana noted during the plenary that they would attempt to reinstate it.

Colleagues also noted that a pilot project to implement real-time reporting via the Android operating system has been started in three districts. Should it prove successful, the plan is to expand its use throughout Ghana.

It was also noted that a programme offering 200 cedi (about US\$ 50) to anyone who reported a (confirmed) case of guinea worm had been effective; such programmes might be useful in surveillance of other diseases.

Recommendations for Priority Actions

- Enhance surveillance under the One Health approach (i.e. conduct joint trainings and investigations, and produce joint weekly bulletins).
- Establish an interoperable, interconnected, e-reporting system.
- Strengthen event based surveillance
- Address workforce needs for the animal health sector.

Indicators and Scores

D.2.1 Indicator and event based surveillance systems – Consolidated score 3 (3 for human; 3 for animal)

Strengths/ Best Practices

Animal health

- There are trained staff in disease detection and reporting from lower levels (communities) to districts for disease confirmation and response.
- Livestock farmers are trained in disease recognition and reporting including reporting of unusual events.
- This training complements the activities of the limited veterinary technical staff in the field.
- Surveillance is countrywide.

Human Health

- The IDSR framework was adopted in 1998 and revised in 2011.
- A list of priority diseases, conditions and events exist.
- Both Indicator and event-based surveillance exists.
- Community-based surveillance prominent in hard-to-reach areas.
- The 2nd Edition of the IDSR Technical Guidelines is being implemented.
- Surveillance is countrywide.
- A weekly epidemiological bulletin is published.
- Timeliness and completeness of weekly reporting is >90%.
- Outbreaks are being detected (meningitis, cholera, Lassa fever, yellow fever).

Areas that need strengthening/challenges

Animal health

- There is inadequate veterinary staff in the country (at both professional and technical levels).
- Data are analysed at all levels.
- Colleagues conduct risk analyses, mapping and use geographic information systems (GIS) – at least at the regional and national levels.
- No linkages exist between colleagues in human health and animal health for reporting at any level.

Human health

- Further capacity building is needed to complete the roll out of the second edition of the Integrated Disease Surveillance and Response.
- Greater involvement from the private sector is needed.
- Collaboration with the animal health sector needs strengthening.
- Surveillance of food safety and other areas needs to be improved.
- Improved functionality of community-based surveillance
- The sharing of information between sectors is poor.
- There is limited motivation among community based surveillance (CBS) volunteers.

D.2.2 Inter-operable, interconnected, electronic real-time reporting system – Consolidated score 1 (1 for human; 1 for animal)

Strengths/ Best Practices

Animal health

- All regions have at least a desktop computer for reporting to national level through email.
- The districts have trained veterinary staff that complete veterinary forms (VFI-VF14) using all reports captured on animal health activities from the communities.
- Suspected listed diseases are reported by the fastest means (telephone) to the next higher level for verification and response.

Human health

- Reporting currently occurs in both paper and electronic formats.
- There is web-based electronic reporting from the district up to the national level.
- The district health information management system is being implemented in all 216 districts.

Areas that need strengthening/challenges

Animal health

- The communities, districts and regions do not have in place electronic reporting systems.
- There is no formal method for sharing surveillance data on zoonotic diseases between the animal and human health sectors.

Human health

- Data entry on the electronic platform from health facilities to district level
- IDSR needs better integration with other platforms/sectors, particularly with respect to making it interoperable.
- The sharing of surveillance data between sectors is poor.
- There is poor network connectivity and internet coverage in some areas.

D.2.3 Analysis of surveillance data – Consolidated score 3 (4 for human; 3 for animal)

Strengths/Best Practices

Animal health

- District health officers compile reports monthly from the communities and report to the regional level.

- The regional offices compile and analyse all reports from the districts and report to the national level.
- Further compilation and analysis of data is conducted at the epidemiology unit at the national level for reporting to the Ministry of Food & Agriculture and OIE.

Human health

- There is a standardized case-based form that includes a laboratory component.
- Data analysis is conducted at district, regional and national levels.
- The national level produces a weekly bulletin to share information, to which most regions contribute.

Areas that need strengthening/challenges

Animal health

- Those working at district level need some further training in data management and analysis of data they compile from the communities.
- Additional training in analysis, risk mapping and GIS at regional and national levels is required.
- The capacity to store data needs to be strengthened.

Human health

- Capacity to conduct analysis at facilities and within some districts need to be strengthened.
- The majority of health facilities are not analysing data, which needs to change.
- There is a lack of interest among staff in health facilities (management level) to conduct data analysis.

D.2.4 Syndromic surveillance systems – Consolidated score 4 (4 for human; 4 for animal)

Strengths/best practices

Animal health

- A handbook on case definitions is available, which guides field staff to detect suspected cases in the communities.
- Training of farmers and some agricultural extension officers on disease recognition and reporting has been taking place in the districts of the country.
- Toll-free numbers are available for any citizen to use in times of zoonotic disease outbreaks to facilitate early reporting to authorized institutions (especially VSD).
- Advocacy meetings are regularly convened with the general public on the "dos and don'ts" during zoonotic disease outbreak situations.

Human health

- Various syndromes and pathogens are detected and reported on including: acute flaccid paralysis (wild poliovirus), viral haemorrhagic fevers (Ebola, Lassa), sexually-transmitted infections (gonorrhoea, chlamydia, etc.), acute watery diarrhoea in those aged over 5 years (cholera), bloody diarrhoea (Shigella), severe acute respiratory infections and influenza-like illnesses (H1N1, H3N2).
- Influenza reporting is completed electronically via email.

Areas that need strengthening/challenges

Animal health

- Professional and technical staff capacity needs to be strengthened.

- Skills development in surveillance, logistics needs to be routinely done.
- Further training of community health volunteers/community health workers should be conducted to support surveillance.
- Routine training of livestock farmers on disease recognition and reporting should be conducted (funds for this are also required).
- There are low levels of admissions into veterinary colleges in the country; this needs strengthening (perhaps through incentives).
- Limited training of Veterinary Surgeons
- The concept of the community health worker in Ghana has collapsed and needs to be adapted/reinvigorated.

Human health

- The laboratory reports sent from the Noguchi Memorial Institute for Medical Research to the Disease Surveillance Department of GHS do not always match with data available through the surveillance system.
- Health facilities do not fully complete case-based forms and some administrative levels are even ignored when compiling data.

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 the World Organisation for Animal Health (OIE).

Ghana's Level of Capabilities

In Ghana, the IHR national focal point (NFP) is the Disease Surveillance Department of the Ministry of Health, ideally situated to be able to report details of infectious disease outbreaks with WHO. The IHR NFP also has the authority within the Ministry of Health to report directly to WHO. Information on outbreaks gathered at local level is transmitted from subdistrict, district, regional to the national level. Verification of reports occurs at the subdistrict and district levels and is shared at these levels with the Veterinary Services Directorate (VSD) and other relevant stakeholders. Multidisciplinary rapid response teams can be mobilized from the subdistrict or district levels.

There are guidelines for conducting risk assessments on surveillance reports; however, these may take more than 48 hours at national level. The IDSR guidelines indicate that risk assessment is to be done at district or regional levels, and there is a need for capacity building in this area in order for staff at these levels to complete this task.

The OIE contact point sits in VSD, and there is a process for sharing information between the animal and human health sectors. It was noted that while this is effective at the beginning of an outbreak, the continued sharing of information throughout an outbreak (and outside of emergencies) tends to diminish.

For chemical hazards, the Environmental Protection Agency (EPA) is responsible, along with the GHS Poisons Centre. They have an independent mechanism for detection and reporting. The health sector at the peripheral level often detects chemical events, but there are delays reporting through the established system for chemical events.

Recommendations for Priority Actions

- Conduct sensitization workshops on the use of Annex 2 of the IHR (2005) to conduct risk assessments and for reporting purposes, with all agencies responsible for non-infectious hazards, as well as for regional and district staff to facilitate timely risk assessment.
- Finalize the associated LIs related to the Public Health Act, 2012 (Act 851), to enable the endorsement of SOPs and guidelines related to risk assessment and reporting.
- Update the terms of reference for the IHR Steering Committee to include sharing of reports of the respective sectors represented on the Committee.
- Formalize the system for sharing reports of zoonotic diseases of international concern with the Public Health Department of the GHS as soon as possible, and to provide continuous updates throughout events to both the IHR NFP and OIE contact points.

Indicators and Scores

D.4.1 System for efficient reporting to WHO, FAO and OIE – Score 3

Strengths/best practices

- Surveillance structure exists at all levels, with community-based surveillance implemented for some priority diseases/conditions and unusual health events (via IDSR).
- Routine reporting indicators are assigned as performance indicators for health directors to achieve as part of the monitoring of the effectiveness of the system.
- IDSR is accepted as the preferred strategy for routine and mandatory reports with standard forms/tools used to collect and report data.
- A database exists for priority events, and alert thresholds are defined for priority events and their data analysed.
- A web-based District Health Information Management System is in operation, which is a major data repository for data on outbreaks.
- There is regular information sharing with IHR NFPs in other countries.

Areas that need strengthening/challenges

- Inadequate systemic surveillance on other hazard areas, resulting in delayed reporting of non-infectious IHR hazards to the IHR NFP.
- No information is gathered on a regular basis from nuclear plant, the radiation protection office or the nuclear regulatory body.
- No data is collected from the births and deaths registries for surveillance purposes.
- There is irregular and weak capacity for analysis of epidemiological data at all levels.

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

Strengths/best practices

- The country's reporting system has been tested recently with timely detection of health events (e.g. the first documented Lassa fever cases in 2011).
- Meetings and sharing of draft reports via emails for commenting works efficiently.
- Ghana has engaged in a number of reports on public health emergencies of international concern (PHEICs) to WHO.
- The use of the Decision Instrument (Annex 2 of IHR 2005) to assess public health events forms part of the IDSR guidelines.
- Linkages in reporting using the One Health approach have been developed.

Areas that need strengthening/challenges

- Collaborative efforts between the health teams and stakeholders at the various administrative levels for risk assessment and information sharing needs to be strengthened.
- Finalize the SOPs and guidelines for reporting.
- Implement a programme of simulation exercises and after-action reviews to test and strengthen systems for reporting.

Workforce Development

Introduction

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

Target

States Parties should have 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). A workforce includes physicians, animal health or veterinarians, biostatisticians, laboratory scientists and farming/livestock professionals, with an optimal target of one trained field epidemiologist (or equivalent) per 200,000 population, who can systematically cooperate to meet relevant IHR and PVS core competencies.

Ghana's Level of Capabilities

Human workforce resources to implement IHR core capacity requirements in Ghana are geographically unevenly distributed and skewed towards the southern parts of the country, particularly in the areas around the capital. Therefore, the health workforce is focused at the central level. Highly skilled health workers including medical doctors, nurses, pharmacists and allied health professionals are concentrated in the Greater Accra and Ashanti regions, particularly at the Korle Bu and Komfo Anokye Teaching Hospitals. Nationwide, there is a general lack of epidemiologists, skilled animal health personnel and experts for chemical and radiological threats.

The Deputy Director of Public Health serves the role of epidemiologist at the regional level, while disease control officers serve as epidemiologists in the districts. Deputy directors normally have advanced training in epidemiology, and disease control officers are mid-level professionals. At the district level there is integrated service delivery with a physician, a few technical officers (mid-level professionals that have training in a particular technical area such as nutrition), a public health nurse, a community health nurse and the laboratory technicians. Environmental health officers are part of the local government, but work with public health when there are outbreaks and serve on the rapid response team (RRT). Veterinarians are also part of the RRT when needed. Information specialists and assistants are scarce at the district and local levels. While there are adequate numbers of social scientists, they are not normally engaged in public health. There are five medical colleges in Ghana, four public and one private. The first cohort of veterinarians graduated from the newly established school of veterinary medicine in 2015. There are approximately 100 trained field epidemiologists available to support outbreak-investigations throughout the country.

There are long-term training programmes available to help expand the pipeline of qualified public health professionals within the country for physicians including applied epidemiology training; nurses, veterinarians and biostatisticians with MPH degree (offered at four universities in Ghana); and laboratory assistants and specialists. There are currently two field epidemiology training programmes (FETPs) in Ghana – a frontline short course (led by the Ghana School of Public Health in collaboration with GHS) and a two-year advanced FETP at the Ghana School of Public Health. Both FETPs target the current public health workforce for training. There are approximately 60 graduates of the two-year advanced FETP; and approximately 100 graduates of the SPH frontline short course. FETP frontline candidates and advanced residents are mentored by members of GHS and graduates of the advanced FETP. There is a partnership

with other countries established in the region in order to share FETP graduates during an emergency event. The sustainability of the FETP programmes currently running needs to be secured.

There is no workforce strategy for the public health workforce in place, but there is a general strategy for workforce development. There are currently no incentives in place to maintain the existing public health workforce within the country. Most public health staff do, however, remain employed with the MoH across the various levels. Junior level staff routinely return to school to seek higher education opportunities, which constitutes the main avenue of attrition of the health workforce. Career tracks for epidemiologists, veterinarians, laboratory assistants and specialists, doctors and nurses are available including degree programmes at the School of Public Health and programmes by the College of Physicians. There is a lack of career movement among FETP graduates, who often return to their position without advancement in the system or other incentives.

Recommendations for Priority Actions

- Develop a public health workforce strategy.
- Set priorities and targets for public health professionals needed at national level and per region/district and ensure all relevant professions are covered.

Indicators and Scores

D.5.1 Human resources are available to implement IHR core capacity requirements – Score 2

Strengths/best practices

- Multidisciplinary HR capacity (epidemiologists, veterinarians, clinicians and laboratory specialists or technicians) is available at national level and in some of the regions.
- National and regional level RRTs have been identified and most of them trained.
- Some RRTs are part of the ECOWAS team of experts (laboratory and health promotion).

Areas that need strengthening/challenges

- There is no workforce strategy specifically for the public health sector.
- There is limited multidisciplinary HR capacity at regional, district and health facility levels.
- There are inadequate numbers of personnel to secure IHR implementation, especially in the areas of animal health, and also a lack of expertise on chemical events, radiation emergencies and skilled personnel in other sectors.

D.5.2 Field Epidemiology Training Programme or other applied epidemiology training programme in place – Score 4

Strengths/best practices

- Advanced and frontline FETP training programmes are in place.
- There are approximately 60 graduates from the advanced FETP and 100 frontline graduates trained per year.
- Support to/from other countries is ongoing.

Areas that need strengthening/challenges

- The FETP does not include adequate staff from animal health.
- Partnerships with other countries in the region to share FETP graduates during emergency events need to be strengthened.

- Ensure sustainability of the FETP programmes.
- Make administrative arrangements to sustain the career progression of FETP graduates.
- D.5.3 Workforce strategy – Score 2

Strengths/best practices

- A general HR workforce plan (the HR Strategic Plan 2016–2020) has been developed.

Areas that need strengthening/challenges

- A public health workforce strategy needs to be drafted and implemented, after which it needs to be reviewed, tracked and reported on annually.
- There is a need to strengthen the mechanism to monitor the implementation and tracking of the workforce strategy.
- There is no evidence of incentives in place to maintain the existing public health workforce within the country.

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.

Ghana's Level of Capabilities

Ghana has finalized a national public health emergency preparedness and response plan, which comprises a multi-hazard, whole-of-society approach; it addresses the IHR core capacity requirements and other IHR-related hazards (e.g. zoonotic diseases) as well as points of entry. The plan, however, needs to be implemented via the national Threat Hazards Identification Risk Assessment (THIRA) tool, which WHO recently completed in Ghana.

Systems for emergency response have been implemented throughout the country as part of Ghana's preparedness programme for EVD. Protocols were established for community surveillance, patient isolation and contract tracing. This system remains in place, and is being used as the foundation for preparedness for other infectious disease hazards.

A public health risk assessment and capacity mapping for Ghana was prepared in July 2016, outlining the key hazards and risks, as well as a comprehensive overview of the core capacities required under Annex 1 of the IHR (2005). That report contains a comprehensive list of recommendations to strengthen preparedness for any emergency (see documentation).

Resource mapping and the identification of stockpiles for priority risks have been done theoretically, and the needs in the regions are known. However, at the time of the JEE mission, stocks had not been pre-positioned for priority risks.

Recommendations for Priority Actions

- Conduct a comprehensive mapping of partner capabilities, roles, responsibilities and resources in case of emergency.
- Conduct a retrospective review of funding flows for emergency response, to identify areas for improvement, equality of distribution and mechanisms for funding areas of greatest need.

- Implement an exercise programme to support all aspects of emergency preparedness, including tabletop exercises to refine plans and SOPs, skill drills and functional exercises to refine the incident management system.

Indicators and Scores

R.1.1 Multi-hazard National Public Health Emergency Preparedness and Response Plan is developed and implemented – 2

Strengths/best practices

- Ghana has a national public health emergency preparedness and response plan.
- The plan has a multi-hazard, whole-of-society approach and covers the IHR core capacity requirements (1A Article 2) as well as other IHR-related hazards including zoonotic diseases and points of entry activities.
- Public health risk and resource mapping have been conducted with WHO support.

Areas that need strengthening/challenges

- There is need to validate the national public health emergency preparedness and response plan using the THIRA tool. WHO completed an assessment in Ghana using THIRA at the end of April 2016, however the results were not available at the time of the mission.
- Surge capacity is not available to respond to public health emergencies of national or international concern.

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

Strengths/best practices

- Public health risk and capacity mapping has been conducted with the support of WHO.
- Emergency procedures for highly infectious diseases are in place throughout the country.

Areas that need strengthening/challenges

- The recommendations of the public health risk assessment and capacity mapping for Ghana need to be implemented.
- The resources to respond to priority risks need to be identified and pre-positioned to enable effective response.
- The protocols for emergency response to non-infectious hazards need to be developed and shared at all levels.

Emergency Response Operations

Introduction

A public health Emergency Operations Centre (EOC) provides response staff with a physical space, centrally located, for coordinating operational information and resources for strategic management of public health emergencies and emergency exercises. EOCs 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

Countries will have a 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; and trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency.

Ghana's Level of Capabilities

Ghana has established a public health EOC and drafted key foundational documents, including EOC operating plans and procedures, and draft SOPs. These documents focus on public health and need revisions to enhance components of the One Health approach. A revision and approval process is under way for these key foundational documents, which await Cabinet Memorandum approval. Without legislative approval, the public health EOC lacks the capacity to respond to public health emergencies.

The public health EOC has membership from organizations such as GSH, the National Disaster Management Organization (NADMO), WHO, the National Ambulance Service, Ghana Immigration Service, Military 37 Hospital, etc. Members convene for periodic meetings and have conducted a tabletop exercise. While the public health EOC has limited capacity at this time, NADMO has a functional EOC which provides primary emergency operations capacity for the country. The public health EOC is designed to be supplementary and specialized in public health emergencies.

The NTCC is a third relevant entity in the consideration of how the public health EOC functions. The NTCC is a coordinating body with technical expertise and logistics capabilities for responding to public health emergencies. A majority of those working in the public health EOC also work in the NTCC. To effectively stand up the public health EOC as a functional response organization, it may be advisable to

Recommendations for Priority Actions

- Clearly define roles and responsibilities and decision-making authority for NADMO, NTCC and the EOC.
- Attain Cabinet level approval of key documents for the public health EOC.
- Proper funds and staff should be allocated so that the public health EOC has continuous coverage and can actively respond (within 120 minutes) to a public health emergency.
- Integrate the public health EOC into the existing emergency response system, along with NADMO and NTCC.
- SOPs for the EOC should be revised/updated to include the threshold for activating/deactivating the EOC.

- Promote a simulation exercise programme across all sectors and among the key actors for the operationalization of plans and SOPs for surveillance and management of emergencies, including for chemical hazards.

Indicators and Scores

R.2.1 Capacity to Activate Emergency Operations – Score 1

Strengths/best practices

- The public health EOC has been established and has draft SOPs for operation.
- Emergency response plans are partially completed.
- Emergency response committees and teams exist.

Areas that need strengthening/challenges

- There is still no continuous coverage of the public health EOC; this is largely due to not currently having someone in the role of EOC coordinator.
- There is still a lack of integration between the public health EOC, NADMO and the NTCC, complicating the decision-making process for policy among them. This makes it difficult for the public health EOC to proceed in hiring and training staff, procuring supplies and developing disease-specific SOPs.

R.2.2 Emergency Operations Centre Operating Procedures and Plans – Score 1

Strengths/best practices

- The NTCC has SOPs available for an EOC that could be adapted, but they are not yet specific to the public health EOC nor are they approved.
- Contingency plans have been developed for some high priority risks.

Areas that need strengthening/challenges

- SOPs should be revised and approved.
- Funding and staff are not adequate.

R.2.3 Emergency Operations Programme – Score 2

Strengths/best practices

- Simulation exercises to test operation capabilities have been conducted.
- Some training for EOC staff has been conducted.

Areas that need strengthening/challenges

- Funds and staff are not adequate.
- No official curriculum has been developed for training staff supporting public health EOC operation.
- No system is in place to activate a coordinated emergency response rapidly (within 120 minutes).

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

Strengths/best practices

- Case management guidelines are available for some priority diseases, including Ebola and cholera.
- Areas that need strengthening/challenges
- Case management guidelines are not available for all priority diseases.

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. influenza 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.

Ghana's Level of Capabilities

In Ghana several stakeholders are involved in responding to public health emergencies: Ghana Police Service, Ghana Armed Forces (GAF), Ghana Immigration Service, Ghana Revenue Authority, Bureau of National Investigations, Ministry of Defence and NADMO.

While there is legislation in place that allows the government to detain/quarantine an individual who presents a public health risk (Public Health Act, 2002; Act 851), there are no formal protocols, MoUs or other agreements between public health, animal health and security authorities on collaboration to respond to a public health emergency.

This changed during the EVD epidemic in West Africa, which spurred cross-cutting discussions among different ministries within the Government of Ghana. These led to the establishment of an interministerial committee that was charged with instituting measures to secure the country's boarders (that is, preventing outbreaks of EVD and preparing for a possible outbreak, which establishing Emergency Operations Centres within the country, especially at select points of entry). Since the EVD outbreak was contained in 2015, collaboration in the interministerial committee has waned, however. Still, the formation of such a committee indicates that the foundation for such cross-sector collaboration is present in Ghana and could be applied to future outbreaks or emergencies.

Recommendations for Priority Actions

- Create formal agreements to improve coordination/collaboration among all stakeholders. Outputs should be service and multisectoral MoUs/SOPs, which clearly outline logistics and support for each role.
- Establish an inter-services health security platform for stakeholders.
- Conduct simulations and table-top exercises regularly to explore and strengthen the existing relationships.

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 – 2

Strengths/ Best Practices

- GAF has many interactions with GHS and MoH (in the areas of One Health, biosecurity, and surveillance of influenza and acute febrile illness); it also worked with VSD during the EVD epidemic.

- The Ghana Police Service has an HIV programme that links to the national programme.
- The Ghana Immigration Service and Ghana Ports & Harbours Authority work closely together.
- NADMO coordinates during disasters. Military Hospital 37 is designated (informally) as the National Disaster Hospital.

Areas that need strengthening/challenges

- There is a lack of formal protocols or MoUs between stakeholders.
- There is a need for specialized units within the various security agencies to deal with public health interactions.
- There is a lack of emphasis on enhancing capacity for nuclear, biological and chemical countermeasures across the security agencies.

Medical Countermeasures and Personnel Deployment

Introduction

Medical countermeasures (MCM) are vital to national security and protect nations from potentially catastrophic infectious disease threats. Investments in MCM create opportunities to improve overall public health. In addition, it is important to have trained personnel who can deploy to respond to a public health emergency.

Target

A national framework for transferring (sending and receiving) medical countermeasures and public health and medical personnel among international partners during public health emergencies.

Ghana's Level of Capabilities

Over the years Ghana has managed a number of national disasters, has received support from abroad during emergencies and has also supported other countries during their emergencies. For example, during the Melcom shopping centre disaster in 2012, Ghana received assistance from Israel to evacuate victims, and during the Ebola outbreak, 42 health workers were deployed from Ghana to the affected countries in West Africa. The country has proved it has the capability to mobilize the necessary logistics in emergency situations, and the capability to mobilize and deploy personnel both domestically and abroad.

Medical countermeasures

Ghana's medical countermeasures capacities are limited, due primarily to the fact that no formal plans exist from which personnel could work to respond. For example, there is no plan in place that identifies procedures and decision-making related to sending and receiving medical countermeasures during a public health emergency; no plan has been drafted to address logistic concerns as well as regulatory concerns of receiving drugs or devices from an international source during emergencies; and there is also no plan to address security concerns that may emerge related to sending, receiving or distributing medical countermeasures during a shortage. Although formal plans are absent, Ghana does have experience in receiving medical countermeasures such as vaccines and personal protective equipment during public health emergencies and there are some mechanisms to receive and distribute medical countermeasures. This is particularly applicable to logistics capacity to store and distribute medical countermeasures including vaccines.

With the exception of antibiotics, Ghana has limited capacity to produce vaccines, laboratory diagnostics or equipment in country. There is currently a stockpile of medical countermeasures available for national use during a public health emergency only for cholera. There are no agreements in place with manufacturers or distributors to procure medical countermeasures during a public health emergency. The country is not part of any regional or international countermeasure procurement or sharing agreements. For distribution of medical countermeasures domestically, there are dedicated resources or staffing identified for tracking and distribution from the national level to the facility level. There is also a pandemic preparedness plan that addresses countermeasures for that specific sector in the country.

The country does not have a plan, procedure or legal provision in place for procuring countermeasures in the event of diseases in animals.

Personnel deployment

There is no formal plan in place to identify procedures and decision-making, training criteria and standards or address regulatory and licensure concerns related to sending and receiving health personnel during a public health emergency. There is however, a draft plan for surge staffing for public health emergency response, including triggers for requesting personnel from other countries. The armed forces have proven to represent a surge capacity during public health emergencies in Ghana, but there is a lack of formal agreements between the sectors. Ghana has received medical personnel in emergency settings previously, but there is lack of training procedures and materials to orient arriving personnel into the response. The country is not part of any regional/international personnel deployment agreements such as the Global Outbreak and Alert Response Network (GOARN). Nevertheless, in 2015 during the Ebola outbreak, health personnel from Ghana were sent to Liberia, Sierra Leone and Guinea to help health personnel in those countries.

Recommendations for Priority Actions

- Develop and ensure endorsement of a national countermeasure plan (including plan for budgeting), which includes sending and receiving medical countermeasures as well as a plan for sending and receiving medical personnel.
- Develop written procedures for rapid procurement, licencing and delivery mechanisms for medical countermeasures needed during a public health emergency.
- Develop and exercise guidelines and relevant agreements for sending and receiving health personnel during a public health emergency.

Indicators and Scores

R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency – Score 1

Strengths/best practices

- There are warehouses nationwide being used for storage of medical countermeasures.
- There are existing structures for distribution of logistics, i.e. a supply chain.

Areas that need strengthening/challenges

- There is a need to develop plans and procedures for sending and receiving medical countermeasures.
- There is a need to get the written plans and procedures endorsed by the relevant stakeholders.

R.4.2 System is in place for sending and receiving health personnel during a public health emergency – Score 1

Strengths/ Best Practices

- Ghana has proven capable of sending and receiving medical personnel during emergency situations.

Areas that need strengthening/challenges

- There is no formal plan in place for sending and receiving health personnel during public health emergencies.
- A plan for training and maintaining the medical personnel who would respond (e.g. via a formal readiness roster) is also lacking.

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 outbreaks of diseases. 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, as well as 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 the 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 need to be tested and updated as needed.

Target

States Parties should have risk communication capacity which is multi-level and multi-faced, real time exchange of information, advice and opinion between experts and officials or people who face a threat or hazard to their survival, health or economic or social well-being so that they can take informed decisions to mitigate the effects of the threat or hazard and take protective and preventive action. It includes a mix of communication and engagement strategies like media and social media communication, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement.

Ghana's Level of Capabilities

GHS prioritizes risk communication under the IHR as one of eight core capacities that WHO Member States need to build and sustain. There is a technical working group (TWG) for National Risk Communication and Social Mobilization that meets regularly. Communication teams have been established and trained for each of the 10 regions. Similar structures do not yet exist at the district, subdistrict or community levels. In addition, there are regional health promotion officers responsible for risk communication activities during public health emergencies; some districts also have technical officers assigned to this role.

Ghana is developing risk communication capacity that is multilevel and multifaceted. The use of social media (i.e. WhatsApp groups) is the newest area of this capacity, which supports real-time exchange of information, advice and opinion between different groups (e.g. experts and officials or people who face a threat or hazard) so that they can make informed decisions about threats and respond appropriately. Social media is part of Ghana's robust media environment, which includes a community radio network, mass awareness campaigns, health promotion, social mobilization, as well as stakeholder and community engagement.

Recommendations for Priority Actions

- Incorporate the One Health approach and finalize and disseminate a draft communication coordination framework, SOPs and flowcharts for approval by MoH/GHS (this is expected to be complete in June 2017).

- Conduct training needs assessment and subsequent training plan to meet capacity gaps in risk communications including developing manuals and SOPs for risk communications and social mobilization at regional and lower levels.
- Support district health management teams to develop risk communication and social mobilization plans as part of routine activities to respond during emergencies.

Indicators and Scores

R.5.1 Risk Communication Systems (plans, mechanisms, etc.) – Score 2

Strengths/best practices

- There is a draft framework with SOPs and guidelines in place.
- Social mobilization, health promotion and community engagement are components of the national response plan for all public health emergencies.
- The communications strategy for influenza (H1N1) is easily adaptable to other diseases.

Note that Ghana's capacity exceeds score 2 in that a draft communications plan is undergoing revision and will soon be sent for approval. Therefore this score should rise to 3 shortly after June 2017 when the MoH/GHS approves the plan.

Areas that need strengthening/challenges

Ghana needs to further develop risk communications by approving a national communications plan. Work in this area includes sensitizing ministers, departments and agencies to recognize the social determinants of health and ensuring TWGs dealing with risk communication and social mobilization manage information systematically.

R.5.2 Internal and Partner Communication and Coordination – Score 3

Strengths/best practices

- There are developed communications channels (formal and informal).
- There are regularly scheduled TWG meetings and routine information sessions with media engaging on specific topics.
- Social media (WhatsApp) and email for cross-border information exchange is being used.

Areas that need strengthening/challenges

Ghana needs to further develop a process for collaboration with the private sector and minimize rigid legal regimes and frameworks that inhibit the flow of communication.

R.5.3 Public Communication – Score 3

Strengths/best practices

- Officials do monitor the media for health topics.
- Ghana has a supportive and dynamic media environment (e.g. community-based radio network).
- There is a robust nongovernmental organization (NGO) sector that addresses multiple health topics across different areas of the country.

Areas that need strengthening/challenges

While national capacity is established, Ghana needs to develop the capacity at district and subdistrict levels among health promotion officers and social mobilizers, and streamline activities across NGOs throughout the country.

R.5.4 Communication Engagement with Affected Communities – Score 2

Strengths/best practices

- Within the GHS structure there are regional health promotion officers responsible for community engagement activities during public health emergencies.
- Public-private partnerships exist through NGOs and community based-radio to reach affected communities with health promotion messages.

Areas that need strengthening/challenges

Ghana needs dedicated funding to strengthen community-based surveillance systems and deliver timely and relevant health messages to affected communities.

R.5.5 Dynamic Listening and Rumour Management – Score 2

Strengths/ Best Practices

- Both the MoH and the GHS have public relations units with trained staff responsible for rumour monitoring and response.
- Two call-in centres have been set up to provide information to the general public and to log rumours.

Areas that need strengthening/challenges

Ghana needs to monitor the effectiveness of methods or messages used to disprove rumours and enhance the capacity to address multi-lingual needs.

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

Ghana's Level of Capabilities

The National Migration Policy (2016) recognizes 42 officially designated points of entry including Kotoka International Airport (KIA), Tema and Takoradi ports. Fourteen of the 42 points of entry (PoEs) (one airport, two sea ports and eleven ground crossings) are designated as such under the IHR (2005), and have core capacities to implement specific public health measures to manage public health risks with the potential for international spread.

The country has trained personnel for the inspection of conveyances at the 14 IHR-designated PoEs. Programmed control of vectors and reservoirs are done at three PoEs (KIA, Tema and Takoradi) and some of the ground crossings. Additionally, all the major ground crossing points have some space for the isolation of passengers but they do not all have access to equipment or personnel for the transport of ill travellers; they depend on district hospital ambulances for transportation.

Routine inspections are done at KIA, (Takoradi and Tema ports,) Elubo and Paga PoEs; ad hoc inspections are done at the other PoEs, due to inadequate personnel. Travellers are checked on entry and exit at points of entry. During the field visits it was noted that at both KIA and the ground crossing at Aflao, the yellow fever vaccine is available (at low cost) for those who do not have proof of vaccination.

The country does not have a specific public health emergency contingency plan for PoEs, but does have a general draft Public Health Incident and Emergency Response Plan, which needs to be formally adopted. There is a draft Airport Public Health Emergency Response Plan for KIA, which is integrated with other national response plans. While a programme to control vectors and reservoirs exists at three major PoEs, other ground crossings have no such capacity.

Ghana has a well-established cross-border exchange of health information, with regular quarterly epidemiological meetings being conducted between district health staff and border agents in neighbouring countries; a WhatsApp group allows for direct information exchange between border agents. These mechanisms keep port health staff aware of outbreaks occurring on either side of the border.

The PoEs for regulated and unregulated animal movements were not cited in the self-assessment but it was observed during the site visit that a veterinarian (is stationed at the PoEs and) might be called if needed. It was noted during the plenary that animals passing through border points were counted, and that number written on a movement permit, which should be inspected by another veterinarian (for anomalies in the number) once the animals reach their destination. It was also noted during the plenary that there are some MoUs with neighbouring countries for ground crossing PoEs.

Recommendations for Priority Actions

- Complete SOPs and guidelines for the port health unit to use across PoEs.
- Integrate the Immigration Act, 2000 (Act 573) and Public Health Act, 2012 (Act 851) for efficient IHR implementation at PoEs.
- Develop a preparedness and response plan for public health emergencies at PoEs.
- Conduct assessments of routine and emergency measures at all designated PoEs.
- Establish appropriate holding rooms at all 14 designated PoEs and implement a routine inspection programme for the remaining 28 PoEs, in order to comply with the requirements under the IHR 2005 for designated points of entry.

Indicators and Scores

PoE.1 Routine capacities are established at PoE – Score 3

Strengths/best practices

- Ghana has 14 designated PoEs with space for port health services in six of them.
- The international airport (KIA), three ground crossings (Elubo, Paga and Aflao) and two ports (Tema, Takoradi) have official capacity to transfer ill travellers for treatment.
- There are trained personnel for routine inspection and documentation of conveyances in 14 PoEs.
- KIA, Elubo and Aflao border crossings have walk-through scanners for screening at entry/exit points.
- There is a programme to control vectors and reservoirs at three PoEs (KIA, Tema and Takoradi).

Areas that need strengthening/challenges

- Availability of ambulances at PoEs is limited.
- Routine inspection programmes at PoEs are limited.
- Conducting routine vector and reservoir controls activities is a challenge.
- There are inadequate resources (personnel, offices and equipment) for port health services.
- Sharing of specimens/strains and reports between public health and animal health laboratories needs to be strengthened.

PoE.2 Effective Public Health Response at Points of Entry – Score 2 .

Strengths/best practices

- An assessment conducted at 14 PoEs found that port health services were effective.
- Ghana has a draft Public Health Incident and Emergency Response plan.
- The draft Airport Public Health Emergency Response Plan is integrated with the other response plans.
- There are systems in place at all points of entry to transfer ill travellers for treatment (though some are informal).

- Information on priority diseases is shared, and points of entry staff sensitized to be alert in screening passengers for these diseases.

Areas that need strengthening/challenges

- The country does not have a specific public health emergency contingency plan for PoEs.
- Most of the PoEs in the country do not have a system in place for transfer ill travellers to appropriate medical facilities.
- The country needs to conduct assessment in the 28 remaining PoEs and sufficiently equip them for port health services.
- Basic facilities for convenience of travellers at many PoEs are lacking.
- No ambulances readily available in districts for the ground crossing points.

Chemical Events

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 require State Parties 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.

Ghana's Level of Capabilities

Chemical event prevention, detection and response activities fall under the responsibility of several stakeholders in Ghana. Key sectors are health, environment trade and industry, transport, agriculture, energy, and mining and the key government ministries, department and agencies are the MoH, GHS, Environmental Protection Agency (EPA), FDA, National Disaster Management Organization (NADMO), Ghana Standards Authority (GSA), Mines Department and the Ghana National Security Council (NSC). The EPA has primary responsibility for surveillance and monitoring of pesticides, industrial and consumer chemical substances, while the FDA is responsible for household chemicals and medicinal and cosmetics products.

Ghana has a national coordinating body to manage chemical safety consisting of EPA's two national committees: the Hazardous Chemicals Committee and the Pesticides Technical Committee, both of which are multi-stakeholder coordinating mechanisms under the Chemicals Control and Management Centre of the EPA. In addition, the EPA has a subcommittee in place that deals with emergency preparedness and response issues to chemical emergencies.

A number of national policies, plans, guidelines and legislation for chemical event preparedness and response exist, which can be found under the section on "relevant documentation". Other important legislation and associated activities include the following: Ghana's Environmental Protection Agency Act, 1994 (Act 490) deals comprehensively with issues related to pesticides; regulations on industrial and consumer chemicals are currently being drafted. A law on hazardous and electronic wastes management and control was passed by parliament in August 2016. FDA legislation is also comprehensive in the area of household chemicals, medicinal and cosmetic products. Ghana also has a number of laws and regulations related to multi-hazard management, which partly covers chemical events. Examples include legislation regarding control of procedures and sites for disposal of hazardous waste (and site registration) through safety reports and safety management systems, on-site emergency plans, off-site emergency plans, land use planning, control of contaminated land, water (drinking and other use), crops, foodstuffs, national and international transport/trade of dangerous goods or substances, hazardous substances registration, etc.

Ghana has a national strategic plan for chemical safety, the National Profile to assess the Chemicals Management Infrastructure. A number of guidelines exist and are updated regularly: guidelines for the surveillance of household chemicals (reporting of adverse events associated with household chemicals); guidelines for the transportation of chemicals; and guidelines for prevention and case management of chemical hazards, toxic exposures and poisoning are available.

The surveillance systems in Ghana also have monitoring activities to support chemical safety. There are monitoring activities to support the surveillance of household chemicals, medicinal and cosmetic products (FDA), in line with the Public Health Act, 2012 (Act 851). Chemical safety monitoring activities are carried out for pesticides and industrial and consumer chemicals under the Environmental Protection Agency Act, 1994 (Act 490).

The FDA has an effective system for collating and monitoring information related to household chemical hazards and medicinal and cosmetic products i.e. through FDA regional offices and institutional contact persons based at health facilities throughout the country. Reports are sent to the head office after collation. FDA has some capacity to test for both chemicals and biological threats in foods and water. However, this system is ad hoc and not routinely implemented.

Investigation reports are produced through the chemicals surveillance and monitoring system, and information is provided through annual reports (conducted by the EPA).

There is no inventory of reference health care facilities for chemical safety. However, there was an oral directive from the President of the Republic, in 2001 designating 37 Military Hospital as a national referral centre for all emergencies including chemicals. Other supporting facilities include the Police Hospital, Teaching Hospitals, Regional Hospitals, and the Ghana Poison Control Centre. There is one reference National Poison Control Centre in Accra, which has access to chemical databases such as INCHEM, TOXBASE AND TOXINZ.

As noted in the recommendations for priority actions, information sharing and collaboration between involved sectors on chemical safety need to be strengthened. Another priority is raising awareness of surveillance and reporting of human cases of chemical events; the policy and guidelines for surveillance and response are not available and capacity for surveillance has not been integrated into the health system. Finally, there is currently no audit/evaluation system for exercises/responses to chemical events in Ghana, though the country does participate in international chemical/toxicological networks, e.g. the INTOX-GENERAL Network of the WHO Network.

Recommendations for Priority Actions

- Strengthen multisectoral, multi-stakeholder national coordinating mechanisms and collaboration for chemical events by developing:
 - a. SOPs to share information within and between sectors in peacetime and during emergencies;
 - b. SOPs outlining roles and responsibilities across relevant agencies for detection and response;
 - c. Surveillance protocols which enable regular reporting and utilization of data across sectors;
 - d. SOPs for rapid risk assessments of chemical events.
- Identify priority chemical events based on risk assessment, and strengthen Ghana's capacity for detection, diagnosis and management of those events by:
 - e. Raising awareness of obligations to report events of unknown origin (i.e. potential chemical events) through the IDSR system if they are regarded as possible public health emergencies;
 - f. Reviewing laboratory capacity for detection of priority chemical events, strengthening and establishing test capacity (or agreements abroad for testing if needed);
 - g. Ensuring access to antidotes and supportive agents for priority poisoning-related emergencies, based on risk assessment for chemical hazards.

Indicators and Scores

CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies – Score 2

Strengths/best practices

- The IDSR strategy exists for reporting and responding to health events from the district to national level in the health sector, which includes the possibility to report any kind of event that might be of

- public health concern (including chemical events), making this a good foundation for strengthening the surveillance in the chemical event area.
- Other non-health sector surveillance systems/sources of information for chemical events exist. They include the security sector and other informal sources (such as schools and traditional health care practitioners).
 - Reporting systems are available from district to national level and vice versa within all key organizations (e.g. GHS, EPA, FDA) and can be built upon to strengthen chemical events. Channels for collaboration and communication between district level health authorities and environmental health authorities do exist, which can be built up for chemical events.
 - Multisectoral collaboration in the context of public health event investigation, response and coordination exist through the District Epidemic Management Committee and District Rapid Response Team, and can be built upon for chemical events.
 - A Poisons Centre exists to provide information and advice on the management of toxic exposure and poisoning, including chemical poisoning.
 - Training and simulation exercise for chemical event detection, surveillance and response involving all levels of management (i.e. district, regional and national) has recently been carried out.

Areas that need strengthening/challenges

- Strengthen capacity for management of chemical events such as laboratory capacity to be able to confirm priority chemical events across all levels, perform rapid risk assessments and train health workers in management of cases.
- Lack of harmonized surveillance protocols and SOPs impact the timeliness of reporting.

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

Strengths/best practices

- A number of national policies, plans, guidelines and legislation for chemical event preparedness, surveillance and response exist.
- Multi-stakeholder, multisectoral national coordinating mechanisms and collaboration for chemical safety exist (e.g. Hazardous Chemical Committee and the Pesticides Technical Committee of the EPA).
- There is involvement in international chemical / toxicological network for chemical safety (e.g. The PCC is part of the INTOX-General Network of WHO).
- Chemical databases such as INCHEM, TOXBASE and TOXINZ exist as reference resources for chemical safety.

Areas that need strengthening/challenges

- Update the strategic plan for chemical safety.
- Institutionalize coordination and timely sharing of information across sectors and agencies at all levels routinely and during emergencies for timely detection and response to chemical events.
- An emergency response plan that clearly defines roles and responsibilities of the relevant stakeholders in detection, surveillance and response needs to be developed.

Radiation Emergencies

Introduction

State parties should have surveillance and response capacity for radio-nuclear hazards/events/emergencies. It requires effective communication and collaboration among the sectors responsible for radio-nuclear management.

Target

State parties should have surveillance and response capacity for radio-nuclear hazards/events/emergencies. It requires effective communication and collaboration among the sectors responsible for radio-nuclear management.

Ghana's Level of Capabilities

The Ghana Atomic Energy Commission (GAEC) is the body responsible for the application of nuclear techniques in research and development, education and training, and technical services. The Nuclear Regulatory Authority (NRA) is the institution with primary responsibility for the control of the use of radiation and surveillance and monitoring in Ghana. The National Nuclear and Radiological Emergency Response Plan describes the roles and responsibilities of the ministries, other organizations and facilities involved in nuclear/radiological emergency response, and public communication. NADMO provides the overall coordination of response to radiation emergencies while the Nuclear Regulatory Authority is the lead technical agency for radiation emergency from initial notification of a nuclear or radiological emergency to its end, when all government agencies have terminated their response activities. These two agencies coordinate all the radiological aspects of the government response to a nuclear and or radiological emergency, with the assistance of the GAEC. The Commission assists the NRA with adequate resources and logistical support during a response, acts as liaison with various governmental agencies that provide technical advice, and indicates protective actions, environmental concerns, food contamination and other related matters to NADMO.

It is the Ghana Atomic Energy Commission that conducts food contamination tests (via the Radiation Protection Institute, which falls under the Commission). Procedures for risk assessment, surveillance and response are incorporated into the National Nuclear and Radiological Emergency Response Plan. The Ghana Atomic Energy Commission is the overall point of contact in the case of nuclear or radiological emergency.

Staff in facilities using radioactive materials are monitored for radiation exposure, however, there are no health facilities with the expertise to manage radiation exposed patients. Should people experience high radiation exposure, they would be provided with first aid and evacuated, although currently no agreements exist as to where these patients would be evacuated, or agreements with carriers to transport them.

Ghana does have a waste management plan for radioactive materials and a mechanism for deep burial of waste materials.

Recommendations for Priority Actions

- Update the National Nuclear and Radiological Emergency Response Plan taking into account recent developments and recommendations from the International Atomic Energy Agency (IAEA) Emergency Preparedness Review, and deficiencies in the SOPs for managing humans exposed to radiation.
- Develop SOPs for multisectoral coordination in line with recommendations outlined in the JEE tool (i.e. reference question 5, page 87).

- Establish systematic information exchange between radiologically competent authorities and human health surveillance units about urgent radiological events and potential risks that may constitute a public health emergency of international concern.

Indicators and Scores

RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies – Score 2

- Strengths/best practices
- National legislation and regulations governing nuclear/radiological sources are established.
- National mapping of nuclear and radiological risks/hazards of some regions and districts has been done.
- Ghana is a signatory to the Convention on Early Notification of a Nuclear Accident and Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

Areas that need strengthening/challenges

- Create reference health care facilities for radiation emergencies and response capacity at national, regional and district levels, in high-risk districts.
- Develop an emergency response plan to consider the range of functions required in a crisis, including the evacuation of highly exposed patients.
- Some of the aspects required to make the SOPs truly functional are not fully developed.

RE.2 Enabling environment is in place for management of Radiation Emergencies – Score 3

Strengths/best practices

- National Nuclear and Radiological Emergency Response Plan describing roles and responsibilities of relevant parties is in place, with associated National Emergency Response Procedures in the Event of a Nuclear or Radiological Accident in place.
- National Standard Operating Procedures for Emergency Response is in place.

Areas that need strengthening/challenges

- Sensitizing staff in the various responsible organizations to the National Nuclear and Radiological Emergency Response Plan needs to be done.
- Processes for the assessment and regular reporting of radiological risks to the appropriate authorities need to be established.
- Simulation exercises to test the revised plan and SOPs should be implemented.

Appendix 1: JEE background

Mission place and dates

Accra, Ghana; 6 to 10 February, 2017

Mission team members:

- Ambrose Talisuna, WHO African Regional Office (Team Lead)
- Frederick Angulo, United States of America, US Centers for Disease Control and Prevention (team co-lead)
- Adrienne Rashford, WHO Headquarters
- Leigh Ann Miller, United States of America, US Centers for Disease Control and Prevention
- Samia Metwally, Food and Agriculture Organization of the United Nations
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- Daniel Yota, Burkina Faso, WHO Regional Office for Africa
- Michael Nagel, Germany, Deutsche Gesellschaft für Internationale Zusammenarbeit
- Hitoshi Oshitani, Japan, JICA

Objective

To assess Ghana's capacities and capabilities relevant to the 19 technical areas of the JEE tool for providing baseline data to support national efforts to reform and improve 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.

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 publicly available.
- The evaluation is not just an audit. Information provided by Ghana was not independently verified but was discussed and the evaluation rating mutually agreed to by the host country and the evaluation team. This is a peer-to-peer review.

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Supporting documentation provided by host country

National Legislation, Policy and Financing

Relevant Documentation

- Public Health Act, 2012 (Act 851)
- IHR (2005)
- IHR Core Capacity Assessment report (2011)
- 2nd Edition IDSR (2012)
- IHR self-monitoring tool (2013 to 2015)

IHR Coordination, Communication and Advocacy

Relevant Documentation

- Public Health Act, 2012 (Act 851)
- IHR (2005)

- IHR Core Capacity Assessment report (2011)
- Terms of Reference IHR 2005 Steering Committee – Ghana

Antimicrobial Resistance

Relevant Documentation

- WHO Global AMR Action Plan – <http://www.who.int/antimicrobial-resistance/publications/global-action-plan/en/>
- OIE recommendations – <http://www.oie.int/our-scientific-expertise/veterinary-products/antimicrobials/>
- Public Health Act, 2012 (Act 851)
- Health Professionals Regulatory Bodies Act, 2013 (Act 857)

Zoonotic Diseases

Relevant Documentation

- Diseases of Animals Act, 1961 (Act 83)
- Public Health Act, 2012 (Act 851)
- Draft National Integrated Strategic Plan for PHEIC 2015-2019

Food Safety

Relevant Documentation

- National Food Safety Policy, 2015 – <http://www.acfs.go.th/FileSPS/Text%20SPS%20GHA%201.pdf>
- Public Health Act, 2012 (Act 851)
- Manual for Foodborne Disease Surveillance in Ghana – www.fdaghana.gov.gh
- Guidelines for handling foodborne disease outbreaks – www.fdaghana.gov.gh

Biosafety and Biosecurity

Relevant Documentation

- WHO Laboratory Biosafety Manual (http://www.who.int/csr/delibepidemics/WHO_CDS_CSR_LYO_2004_11/en/, accessed 20 February 2016)
- Documentation of dangerous pathogen collections housed in the country – NMIMR and KCCR records
- Policy document for bio-risk or biosafety management – NMIMR and KCCR
- Laboratory training reports – GHS, NMIMR and KCCR

Immunization

Relevant Documentation

- Comprehensive multiyear plan 2015–2019
- EPI vaccines and consumables forecasting tool
- 2014 asset tagging and cold chain inventory report
- 2014 Ghana Demographic and Health Survey
- 2014 effective vaccine management assessment report
- Revised EPI policy

National Laboratory System

Relevant Documentation

- Laboratory Biosafety Manual – Third edition. Geneva: World Health Organization; 2004 (http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/, accessed 23 February 2017)
- A report on assessment of diagnostic services, sample referral network and laboratory supply chain capacity, 2016
- Draft national laboratory policy
- Draft national laboratory strategic plan

Real-Time Surveillance

Relevant Documentation

Animal health

- Performance of Veterinary Services – 2008, 2011 & 2016
- List of notifiable diseases
- OIE Aquatic Animal Health Code and Terrestrial Animal Health Code (<http://oie.int/international-standard-setting/aquatic-code/> and http://www.rr-africa.oie.int/docspdf/en/Codes/en_csat-vol1.pdf, accessed 23 February 2017)
- Veterinary monthly and annual reports
- Veterinary Services Directorate Disease Reporting Formats (VF1-VF14)
- Diseases of Animals Act, 1961 (Act 83)
- Veterinary Surgeons Law, 1992 (PNDCL 305C)
- Public Health Act, 2012 (Act 851)

Human health

- Ghana Weekly Epidemiological Bulletin
- IDSR Technical Guidelines
- Plans for enhancing syndromic surveillance – CDC/WHO/GHS IDSR roll out
- Plans for developing or enhancing event-based surveillance – CBS Review Plans
- OIE reports from World Animal Health Information System (WAHIS)

Reporting

Relevant Documentation

- Second Edition IDSR Guidelines (2012)
- IHR (2005)
- IHR Core Capacity Assessment report (2011)
- Terms of reference for IHR Steering Committee Members

Workforce Development

Relevant Documentation

- Sample of field epidemiology training curriculum used in the country
- General workforce strategy
- Annual reports based on workforce strategy

Preparedness

Relevant Documentation

- Monitoring and Evaluation for Disaster Risk Reduction – <http://www.un-spider.org/risks-and-disasters/sendai-framework-drr>
- Sendai Framework for Disaster Risk Reduction 2015–2030 – <http://www.unisdr.org/we/inform/publications/43291>
- Public Health Risk Mapping And Capacities Assessment In Ghana 2016 – <http://www.afro.who.int/en/ghana/ghana-publications.html>

Emergency Response Operations

Relevant Documentation

- Draft versions of foundational documents (EOC operating plans and procedures and draft SOPs)
- NADMO Act 927 2016 replacing Act 517 (National Disaster Management Organisation Act 1996)

Linking Public Health and Security Authorities

Relevant Documentation

- Public Health Act, 2012 (Act 851)
- MoH-EOC EVD Plans/Protocols
- NADMO Pandemic Response Plan/Protocols

Medical Countermeasures and Personnel Deployment

Relevant Documentation

Pandemic Preparedness Plan

Risk Communication

Relevant Documentation

- Draft communication coordination framework, flowcharts and SOPs
- Risk communication TWG member database
- ToR of the NTCC risk communication TWG
- Media monitoring reports

Points of Entry

Relevant Documentation

- Immigration Act 2000 (Act 573)
- Public Health Act 2012 (Act 851)

- Mosquitoes Ordinance (Cap 75); Vaccinations Ordinance (Cap 76); Aerial Navigation and Sea Port Regulations (Cap 77); Infectious Diseases Ordinance (Cap 78)
- Draft SOPs for public health emergency response for all PoEs
- Checklist for hygiene auditing of premises of air catering services at the airport
- Draft Airport Public Health Emergency Response Plan
- Draft Public Health Incident and Emergency Response Plan

Chemical Events

Relevant Documentation

- IHR (2005) Chemical Event Tabletop Exercise. Draft Report. Ghana; 2016
- Manual for the public health management of chemical incidents. Geneva: WHO; 2009 (http://www.who.int/environmental_health_emergencies/publications/Manual_Chemical_Incidents/en/, accessed 19 February 2017)
- National Disaster Management Organization Act, 1996 (Act 517)
- Environmental Protection Agency Act, 1994 (Act 490)
- The Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917)
- The Public Health Act, 2012 (Act 851)
- Ghana Health Service and Teaching Hospitals Act, 1996 (Act 525)
- Standards Authority Act, 1973 (N.R.C.D 175)
- National Disaster Management Plan. NADMO, Ghana; 2010
- National Chemical, Biological, Radiological and Nuclear (CBRN) Emergency Response Plan, National Security Council Secretariat, Ghana
- Setting up of the Ghana Poison Control Centre. In: Policy on Occupational Health. MoH, Ghana; 1997
- Guidelines for the surveillance of household chemicals, medicinal and cosmetic products. FDA, Ghana (http://www.fdaghana.gov.gh/index.php?option=com_content&view=article&id=24&Itemid=5, accessed 4 July 2016)
- Draft guidelines for the transportation of chemicals in Ghana. EPA, Ghana
- Draft guidelines for the prevention and case management of chemical and other toxic exposures and poisoning in Ghana. Ghana Poison Control Centre, Ghana Health Service; 2016
- Standard Treatment Guidelines, Republic of Ghana, 6th edition. Government of Ghana; 2010 (<http://apps.who.int/medicinedocs/en/d/Js18015en/>, accessed 19 February 2017)
- Environmental Assessment in Ghana. A guide. EPA; 1996
- Environmental Monitoring Reports in EPA Annual Reports. EPA; 2015
- Report of the Cyanide Investigative Committee. Ministry of Environment and Science, Ghana; 2002
- National Profile to Assess the Chemicals Management Infrastructure in Ghana (http://cwm.unitar.org/national-profiles/publications/cw/np/np_pdf/Ghana_National_Profile.pdf, accessed 19 February 2017)

Radiation Emergencies

Relevant Documentation

- National Nuclear and Radiological Emergency Response Plan
- National Emergency Response Procedures in the Event of a Nuclear or Radiological Accident
- National Disaster Management Plan
- National Standard Operating Procedures for Emergency Response
- The National Disaster Risk Reduction And Management Bill (No II of 2016)
- Nuclear Regulatory Authority Act 20015 (Act 895)
- Ghana Atomic Energy Commission Act, 2000 (Act 588)
- Radiation Protection and Safety Guide, GRPB-6: 2000
- IAEA Convention on Early Notification of a Nuclear Accident – <https://www.iaea.org/publications/documents/treaties/convention-early-notification-nuclear-accident>
- IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency – <https://www.iaea.org/publications/documents/treaties/convention-assistance-case-nuclear-accident-or-radiological-emergency>
- GRS Part 7 Preparedness and Response for a Nuclear or Radiological Emergency – http://regelwerk.grs.de/downloads/ds457_gsrpart7version30_apr-2013.pdf

