Ebola virus disease preparedness strengthening team

Ghana country visit
10–15 November 2014

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Contents

Executive summary

The current epidemic of Ebola virus disease (EVD) in West Africa poses a considerable risk of introduction of the virus into currently unaffected countries. The EVD outbreak has been declared a public health emergency of international concern by the WHO Director-General under the International Health Regulations (2005) (IHR). Unaffected countries with land borders adjoining countries with Ebola transmission have been advised by the IHR Emergency Committee to establish surveillance and alert systems for clusters of unexplained fever or deaths due to febrile illness, establish access to a qualified diagnostic laboratory for EVD, ensure that basic infection prevention and control measures are in place in health care facilities, ensure that health care workers are trained in appropriate infection prevention and control and establish rapid response teams to investigate and manage EVD cases and their contacts.

To support currently unaffected countries in strengthening their preparedness for introduction of EVD, WHO and partners are accelerating activities to ensure immediate Ebola outbreak response capacity in Benin, Burkina Faso, Cameroon, the Central African Republic, Côte d'Ivoire, the Democratic Republic of the Congo, Gambia, Ghana, Guinea-Bissau, Mali, Mauritania, Nigeria, Senegal and Togo. The activities include a preparedness checklist[1] of the components and tasks involved in an Ebola response and deployment of international preparedness strengthening teams to high-priority unaffected countries to facilitate use of the checklist and to help the countries to plan and build on their preparedness work. The teams are formed in partnership with both national and international organizations.

The preparedness strengthening team deployed to Ghana focused on specific objectives in order to assist the country in becoming as operationally prepared as possible to detect, investigate and report potential EVD cases effectively and safely and to mount an effective response to prevent a larger outbreak. To accomplish this goal, the team conducted "scoping" activities, stakeholder meetings, site visits and a "table-top" simulation exercise to determine what systems were in place and what aspects of preparedness could be strengthened.

Ghana has an established mechanism for managing disasters and emergencies, the National Disaster Management Organization (NDMO), which was established by an Act of Parliament in 1996. Preparedness and response for EVD is the responsibility of the Ministry of Health, which oversees health care services in Ghana. A national preparedness and response plan for the prevention and control of EVD was prepared and last updated in August 2014. The plan includes objectives, activities and a budget, structured into five thematic areas: planning and coordination; surveillance, situation monitoring and assessment; case management; social mobilization and risk communication; and logistics, security and financial resources. Much work has already been carried out, and two committees—an interministerial committee with representation from multiple sectors and a national technical coordinating committee with representation from multiple national, international and private agencies—meet weekly to review progress.

The country visit to Ghana resulted in identification of both strengths and opportunities for improvement in all 10 components of the Ebola response outlined by WHO.

Some of the strengths identified were:

- the existence of a budgeted national preparedness and response plan, last updated in August 2014;

[1] Consolidated Ebola virus disease preparedness checklist: http://apps.who.int/iris/bitstream/10665/137096/1/WHO_EVD_Preparedness_14_eng.pdf

- the existence of an adapted EVD case definition, case reporting form, contact-tracing forms and corresponding protocols;
- training of national and regional health staff in case management and surveillance under way;
- social mobilization activities under way; and
- identified resources for EVD preparedness, including from partners.

Of the opportunities for improvement, five were identified as critical and must be fully operational for an immediate response in the case of an EVD event:

- Confirm that case definitions have been distributed to all regional and district health service offices and local health care facilities and that staff in high-risk areas have received appropriate training in using the case definitions to detect EVD cases.
- Establish a fully functional emergency operations centre, including complete coordination mechanisms.
- Fully staff rapid response team(s), and ensure that they are coordinated and resourced.
- Ensure that the EVD treatment centre(s) and their staff are fully prepared to receive EVD patients.
- Identify and implement a data management system for contact tracing, and train staff in its use.

Introduction

Given the evolving situation of Ebola virus disease (EVD) in West Africa, there is a considerable risk that cases will appear in currently unaffected countries. With adequate preparation, introduction of the virus can be contained before a large outbreak develops. WHO is currently deploying international "preparedness strengthening teams" to help unaffected countries strengthen or plan preparedness. The teams are formed with national and international partners and networks, such as the United States Centers for Disease Control and Prevention (CDC), the International Association of National Public Health Institutes and the Global Outbreak Alert and Response Network. The teams visit countries to support them in assessing and improving their operational readiness for EVD to the greatest degree possible.

In August 2014, the WHO Director-General declared the EVD outbreak a public health emergency of international concern under the International Health Regulations (2005) (IHR). The IHR Emergency Committee recommended that unaffected states with land borders adjoining states with Ebola transmission urgently establish surveillance for clusters of unexplained fever or deaths due to febrile illness; establish access to a qualified diagnostic laboratory for EVD; ensure that basic infection prevention and control measures are in place in health care facilities and that health workers are aware of and trained in appropriate procedures; and establish rapid response teams with the capacity to investigate and manage EVD cases and their contacts.

In particular, the IHR Emergency Committee recommended that countries:

- establish alert systems at:
  - major land border crossings with already affected countries (which are currently Guinea, Liberia and Sierra Leone) and
  - the airport, seaports (if any) and health care facilities, especially major hospitals, in the capital city;
- activate their epidemic management committee and rapid response teams;
- ensure that adequate infrastructure and supplies for infection prevention and control are available in health care facilities;
- ensure that health care workers have received training in the application of standard precautions and use personal protective equipment (PPE); and
- consider activating public health emergency contingency plans at designated points of entry

EVD preparedness is also supported by the United Nations Mission for Emergency Ebola Response, which has five strategic aims: to stop the outbreak, treat infected patients, ensure essential services, preserve stability and prevent further outbreaks. A consultation between WHO and partners on EVD preparedness and readiness, held in Brazzaville on 8–10 October 2014, agreed on intensified, harmonized, coordinated action to support currently unaffected countries. WHO is accelerating preparedness activities to ensure immediate Ebola outbreak response capacity in Benin, Burkina Faso, Cameroon, the Central African Republic, Côte d'Ivoire, the Democratic Republic of the Congo, Gambia, Ghana, Guinea-Bissau, Mali, Mauritania, Nigeria, Senegal, and Togo.

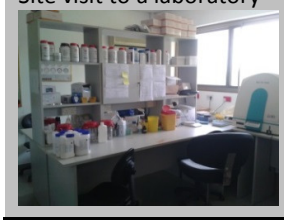
Objective of the country visit

The objective of the visit of the preparedness strengthening team to Ghana was to ensure that the country is as operationally ready as possible to detect, investigate and report potential EVD cases effectively and safely and to mount an effective response that will prevent a larger outbreak from developing if an EVD case is introduced into the country. The visit identified the next steps required to strengthen preparedness over 30, 60 and 90 days. The particular focus was supporting a country at risk in developing its own operational readiness for EVD by using in-country resources, expertise and networks to the greatest extent possible.

Country visit team

The joint team to strengthen EVD preparedness in Ghana (Annex 1) was composed of representatives of Ghana's Ministry of Health, WHO, CDC, the Antigone Consortium, the Bernhard Nocht Institute for Tropical Medicine (Hamburg) and partners working in the country.

Activities

Day 1. 10 November		
Team briefing by the WHO Representative in Ghana	WHO Ghana	Introduction of the team, briefing on the context in Ghana and preparedness measures taken, supported by WHO and partners
Agreement on mission objectives with the Minister of Health	Ministry of Health	Initial mission objectives set out by the WHO Representative, the Deputy Minister of Health and the national Ebola task team WHO gave a briefing on the context of the WHO response, IHR Emergency Committee recommendations for preparedness, the Brazzaville meeting and establishment of the United Nations Mission for Emergency Ebola Response. Introduction of the consolidated preparedness checklist
Day 2. 11 November		
Meeting with Ministry of Health and partners to discuss current preparedness for EVD in Ghana 	Miklin Hotel	Meeting attended by representatives of the Ministry of Health, the mission team, United Nations agencies, development partners, nongovernmental organizations and other stakeholders The mission team introduced the preparedness checklist to the five working groups, which corresponded to the thematic areas of the Ghanaian national EVD response plan: • coordination • surveillance, situation monitoring and assessment • case management • social mobilization and risk communication • logistics, security and financial resources. The working groups outlined the measures that are already in place, specific gaps, needs and priorities.
Site visit to a laboratory 	Noguchi Memorial Institute for Medical Research	Site visit to the BSL-3 facility responsible for testing clinical specimens from suspected EVD cases. The aspects assessed included sample reception, pre-analytical procedures, molecular methods, biosafety and biosecurity, training and stocks of consumables.

Site visit to an Ebola treatment centre 	Tema General Hospital	Site visit to the EVD treatment centre at Tema General Hospital. The aspects assessed included progress in construction of the centre, the completeness of the facility, progress in following up the recommendations made during the previous assessment and overall readiness to receive EVD patients.
Site visit to an emergency operations centre	Accra	Meeting with the EVD emergency operations centre team to discuss readiness
Site visit to Kotoka International Airport clinic	Accra airport	Site visit to the international airport, a major point of entry, to assess preparedness, including entry screening and protocols for isolating patients
Consultations with key stakeholders	Noguchi Memorial Institute for Medical Research	Meeting with the senior virologist, Dr Kofi Bonney, to discuss EVD laboratory preparedness
	United Nations Children's Fund (UNICEF)	Meeting on current and planned community awareness and social mobilization programmes with Rushnan Murtaza, Surani Abeyesekera and Fabrice Laurentin
	Ministry of Health	Meeting with the Deputy Minister for Health, Dr Victor Bampoe, to identify initial gaps and to emphasize the necessity to accelerate preparedness activities
Day 3. 12 November		
Preparation of the table-top exercise	Miklin Hotel	The team agreed on the scope of the exercise. The scenarios would reflect expected actions in the areas of detection, points of entry, case management, laboratory testing, contact tracing, social mobilization and coordination. The expected actions would be reported and used to evaluate the practical exercise the following day.
EVD table-top exercise 	Miklin Hotel	The exercise involved WHO, CDC, Ministry of Health authorities, United Nations agencies and development partners. It comprised two scenarios: one at a health care facility and the other in a rural village. Strengths and weaknesses at national, regional and district levels were addressed.
Consensus on findings (field and exercise)	Miklin Hotel	The group again broke up into the five working groups. The outcomes of the exercise and the field visit were discussed, and consensus was reached on strengths and weaknesses.

Day 4. 13 November		
Priorities and time line	Miklin Hotel	The five working groups compared their findings with the requirements of the expanded preparedness checklist. They agreed on priorities, including a time line for the next 30, 60 and 90 days.
Day 5. 14 November		
Meeting with the Minister of Health and the WHO Representative	Ministry of Health and WHO Representative	Meeting to discuss key findings from the EVD preparedness assessment with the Minister of Health
Ministerial and stakeholder debriefing	Miklin Hotel	Final briefing on strengths and weaknesses of Ghana's operational preparedness, and high-level recommendations
Finalization of action plan and mission report	WHO Ghana	A draft of the action plan and mission report was finalized.
Meeting with United Nations country team	United Nations Development Programme	Briefing on preparedness activities and United Nations country team support

Background

United Nations General Assembly resolution 2034 calls on all nations to establish mechanisms to manage disasters and emergencies. As a result, the Government in Ghana established the NDMO in 1996 by an Act of Parliament (Act 517) and made it responsible for the management of disasters and similar emergencies, for rehabilitating people affected by disasters and "related matters". In addition, Act 517 authorizes the establishment of disaster management committees at national, regional and district levels. A revised bill was drafted with amendments to reinforce the current system. The provisions of the Bill include further refinement of the role of the NDMO, with over two pages of a detailed listing of its functions, which include coordination and operations.

Preparedness and response for EVD is the responsibility of the Ministry of Health, the entity responsible for health care delivery in Ghana. The Ministry oversees a number of agencies, including the Ghana Health Service, the teaching hospitals and the national ambulance service. The Health Service, which is decentralized to regional and district levels, is the main Government agency for health service delivery.

In August 2014, the national preparedness and response plan for the prevention and control of EVD was updated in collaboration with stakeholders and with support from WHO and CDC. The plan was designed to guide multisectoral planning and response in Ghana, specifically for the threat of an EVD outbreak. The plan contains objectives, key elements, including activities (with time frames), and a budget. It has five thematic areas:

- planning and coordination;
- surveillance, situation monitoring and assessment;
- case management;
- social mobilization and risk communication and
- logistics, security and financial resources.

An inter-ministerial committee including the Ministers of Health, the Interior, Defence, Food and Agriculture and Communications, which is chaired by the Minister of Health, provides high-level political support for further development and implementation of the national EVD plan. This committee also coordinates, provides policy and strategic direction to and ensures the involvement

and commitment of all sectors and provides an enabling environment and resources for effective, efficient implementation of the EVD plan. The committee meets weekly. The Policy Monitoring and Evaluation directorate of the Ministry of Health serves as the secretariat of the committee.

A national technical coordinating committee has been constituted to provide technical back-up to the inter-ministerial committee, to plan and execute technical preparedness and response actions and to monitor and evaluate performance. The committee consists of representatives of relevant ministries, departments and agencies, including the Noguchi Memorial Institute for Medical Research, the military, the police, the Ghana Red Cross Society, United Nations agencies and private sector entities. The committee is chaired by the Director-General of the Ghana Health Service. The Public Health Directorate of the Health Service serves as the secretariat for the committee. The committee meets weekly and is divided into subcommittees for the five thematic areas described above.

A fully functional EVD emergency operations centre is being established to ensure an adequate, timely response to an EVD incident. The main areas addressed are operations (surveillance and epidemiology, case management, laboratory services, ambulance services and social mobilization), data management and finance, logistics management and communications. The terms of reference of the centre include:

- prevention of and protection against the introduction and spread of EVD in Ghana;
- rapid identification, isolation and management of EVD incidents and coordination of all activities for controlling the infection;
- liaison with other institutions to manage public information and coordinate community action;
- identification of resource requirements and liaison with the Government and development partners to fill the gaps; and
- briefing the Government of activities to control the infection.

Findings and recommendations

This section briefly summarizes the infrastructure and activities for EVD preparedness that are already in place in Ghana and identifies some opportunities for improvement to strengthen the nation's readiness in the event of an EVD incident. For detailed information, see Annex 3; for a summary of action points in the opportunities for improvement, see Annex 4.

The section first addresses the overall response structure and then the 10 components of the WHO consolidated checklist for EVD preparedness, grouped under the five areas covered by the subcommittees of the national technical coordinating committee.

Overall response structure

Strengths

The Ghana EVD plan is structured into five thematic areas. This appeared to be a sensible way to divide up the work, primarily in health service delivery, into reasonable, manageable parts. Although these thematic areas provide a good framework for planning EVD activities, they are not mutually exclusive, and some actions overlap. Each thematic area has an established technical subcommittee with identified leadership.

An EVD emergency operations centre is planned. A location has been identified, and some of the appointed staff have been trained in basic incident management. The supporting standard operating procedures for management and staffing of the centre have been initiated. A well-respected, high-

level health official has been appointed as the “Incident Commander”. Appointment of a high-level person accountable for managing the health aspects of EVD preparedness and response was necessary and appears to be welcomed by most people within and outside the health sector.

Opportunities for improvement

Although the Ghana NDMO has legislative authority for overall management of disasters, the necessity for technical health leadership during significant health events and all emergencies is not recognized in its organizational charts and procedures. The emergency plans of the Organization should clearly outline the leadership required from the health sector during IHR events, which include health emergencies such as the introduction of EVD into Ghana.

As most emergencies or disasters have health consequences for the population, the health sector is often at the forefront or on the front lines of the response. This is particularly the case during disease outbreaks; therefore, it is essential that the health sector create and maintain a “health emergency management” programme that includes the necessary resources for preparedness, response and recovery.

The health sector and its stakeholders should be commended for initiating an EVD incident management plan and for planning for event coordination by establishing an EVD emergency operations centre. The planning and draft coordination mechanisms that are under way are necessary. However, the relations and operational congruence of the EVD thematic areas and the planned EVD emergency operations centre with those of the NDMO emergency operations centre are not clear. It is suggested that the relations between the health sector and the NDMO be further refined. The legislation under which the Organization operates should perhaps be examined more closely in relation to its legal authority in public health and its responsibility during public health emergencies. Roles, responsibilities and reporting lines must be clarified among jurisdictions. Furthermore, specific plans for public health events at subnational level should be developed, with the necessary legislation.

Planning and coordination

1. Coordination

Strengths

- The national EVD plan (updated in August 2014) continues to evolve. The plan and the designation of leaders for each technical area are positive steps towards creating a platform and culture of preparedness.
- Five technical subcommittees for EVD are in place. The divisions of labour are an excellent starting point for ensuring that the many activities can be managed.
- Plans and funding for the national emergency operations centre infrastructure are in place. The centre will be necessary to manage the consequences of an EVD outbreak on non-health services.
- An “incident commander” for the emergency operations centre has been appointed, and standard operating procedures for management and staffing of the centre are being drawn up.
- Staff at national and ministerial levels have received basic training in incident management. This is a positive step to ensure that preparedness and response personnel understand the necessary management processes.
- The United States Department of Defence has offered to provide initial incident management training and has committed itself, with the consent and assistance of the Ministry of Health, to complete training within 30 days.

- The WHO Country Office has offered to provide computers and other technical equipment for the EVD emergency operations centre.

Opportunities for improvement

- The national plan should be updated to include the technical leadership of the health sector during public health events and emergencies.
- The latest version of the national EVD plan has not yet been cleared or distributed.
- EVD plans are required at subnational level to ensure clear identification of responsibilities at the local level. Development of such plans in coordination with national counterparts will provide further cohesion and the required interoperability, to support a coordinated response.
- EVD operational plans are required for each of the five technical subcommittees.
- A national governance framework for public health emergency planning and response should be considered, in view of the broad role of the NDMO. Health sector technical leadership (for all health hazards) is not clearly addressed in national plans.
- A health emergency management programme (preparedness, response and recovery) is required, including training and a progressive exercise programme. Establishment of the emergency operations centre should be accelerated, and areas that require further funding and support should be identified, as should its relations with other sectors and ministries.

Surveillance, situation monitoring and assessment

2. Surveillance

Strengths

- Case definitions have been prepared and distributed to districts, which have been asked to distribute them to health facilities.
- Case investigation and reporting forms have been prepared, distributed and are in use in some facilities.
- An infrastructure for surveillance and reporting is in place and was recently tested in the assessment and laboratory testing of a number of suspected cases. A plan is in place to analyse the data from these cases to identify potential areas for improvement.
- Staff at national and regional levels have been trained in surveillance with the case definition and case investigation and reporting form.
- Partners for community-based surveillance have been identified.
- Additional training on use of case reporting forms and surveillance is planned at district level.
- A 24 h/24 h, 7 d/7 d, toll-free hotline is reported to be available that community members can used to obtain advice and information on EVD. A call centre that will expand the community hotline is being developed.
- A mechanism for medical staff to request technical assistance in suspected EVD cases is reported to be in place.

Opportunities for improvement

- The extent of distribution of the case definitions, case report and investigation form and reporting protocol is not clear; the completeness of distribution to health facilities has not been assessed.
- Key staff at district and community levels have not yet been trained in use of the case definitions, reporting processes and completion of surveillance forms.

- It is unclear whether a simplified case definition has been distributed to community members and to the call centre.
- There is no clear plan for monitoring, investigating and responding to rumours of suspected cases.
- The community hotline does not appear to have the capacity to serve as a rapid alert system for suspected cases reported by the community. No protocol, script or algorithm is available to help hotline operators to decide when and how to communicate reports of suspected cases received from community members to the appropriate health authorities.
- There has been no widespread national publicizing of the current hotline.

3. Rapid response team

Strengths

- Key members of national and regional rapid response teams have been identified and trained in surveillance, contact tracing and management of suspected cases.
- A plan has been drawn up for the identification and training of many epidemiological and clinical rapid response teams at district level, beginning with five districts in each region.

Opportunities for improvement

- The interactions among members of the rapid response teams should be clarified, including standard operating procedures, organizational charts and terms of reference. Team structures should also be defined.
- Further work is required to establish, activate and deploy teams and to define communication protocols for existing rapid response teams.
- Rapid response teams do not currently include logisticians[1] or social mobilization experts[2].
- No clear logistics are in place for ensuring that rapid response teams have access to transport or the materials and supplies required for response. The materials and supplies include vehicles available on short notice for travel to response sites, fuel for vehicles, case investigation and contact-tracing forms, personal protective equipment (PPE), phones, SIM cards and cell air time, administrative documentation and per diem for lodging and meals.

4. Contact tracing

Strengths

- A standard operating procedure for contact tracing has been developed.
- Train-the-trainer workshops on contact tracing have been run for staff at national and regional levels.
- Potential contact tracers have been identified at district and community levels.
- A plan for coordinating contact tracing at community, district, regional and national levels is reported to be available.

[1] Since the assessment by the preparedness strengthening team and preparation of this report, the Ministry of Health has reported that a logistics leader has been identified and an EVD logistics database has been established (http://41.201.51.227/ebola.html).

[2] Since the assessment by the preparedness strengthening team and preparation of this report, the Ministry of Health has reported that it is considering including health promotion officers for social mobilization and risk communication in regional and district rapid response teams.

Opportunities for improvement

- An electronic data management system for contact tracing has not yet been identified or implemented.
- Resources and materials for data collection in the field are not yet available. The resources may include computers, mobile equipment, data management personnel and other materials necessary for management with the data system selected.
- There is no clear supervisory system or reporting structure for contact-tracing activities at district and community levels.
- Contact tracers at district and community levels have not yet been trained. Their training might include contact tracing, data collection, data management and established contact-tracing protocols.
- No logistics yet exist to ensure that contact-tracing teams will have the resources required, including no-touch thermometers, communication and data collection devices and transport.
- No protocol or operating procedure exists for individuals who are resistant to or non-compliant with contact tracing.

5. Points of entry

Strengths

- Protocols, plans and operating procedures have been developed to identify, manage and refer suspected patients from points of entry.
- Observation rooms and a mechanism for referral to health facilities have been established at two points of entry.
- Teams to assist travellers and ensure correct isolation of suspected cases have been identified at certain (exact number unknown) points of entry.
- Heads of staff at points of entry have been trained in protocols for dealing with suspected cases.
- An exit screening protocol has been developed and is ready for implementation at one point of entry in the event of a confirmed EVD outbreak.

Opportunities for improvement

- Not all points of entry have teams for identifying and processing suspected cases.
- Not all teams at points of entry have received training in case definition, correct isolation, infection prevention and control, reporting mechanisms and referral processes.
- Points of entry do not have adequate resources and materials (e.g. PPE, soap, disinfectant) to provide appropriate screening and isolation.
- Not all points of entry have isolation or holding areas for suspected cases. It is unclear whether all points of entry have received technical guidance and specification of isolation or holding areas or whether all of the existing isolation or holding areas have been assessed to ensure that they meet specifications.
- Not all points of entry have been assessed to ensure that protocols for the identification and management of suspected cases are in place and are being followed correctly.
- Not all points of entry have exit screening protocols in the event of an EVD outbreak.

Case management

6. Case management

Strengths

- The WHO clinical management manual is being updated.

- Case management training has been initiated at national and regional levels.
- Construction of the first of three planned Ebola treatment centres is nearing completion on the grounds of Tema Hospital, with a 12-bed occupancy.
- Regional and district health facilities that could potentially accommodate an Ebola treatment centre have been identified.
- Three ambulances have been assigned to transport confirmed cases of EVD.
- Operationalization of the Ebola treatment centre at Tema Hospital has been tested in a simulation exercise, and gaps have been identified.
- Some burial teams have been identified and trained and have participated in simulation exercises.
- All emergency technicians in Ghana have been sensitized to EVD, and information flyers have been distributed to all ambulance stations.
- Regional emergency teams have been identified and have received initial training in handling suspect and confirmed cases of EVD.

Opportunities for improvement

- The Ebola treatment centre at Tema Hospital should be rapidly modified to make it functional before it receives an EVD case.
- Case management teams must be fully prepared to receive and care for EVD patients. This will require continued training in case management and infection prevention and control and further simulation exercises.
- Health care workers must be further sensitized to recognize EVD, as a differential diagnosis from febrile illness is required to permit surveillance and early case detection.
- Health care workers must undergo continuous training on the clinical manifestations and management of EVD.
- Cascade training for case management teams in all regions should be completed.
- Rapid assessment should be completed of the readiness of designated health facilities to identify, isolate and refer suspected cases, including ensuring that isolation or holding areas meet the standard specifications.
- Protocols are required for safe burial practices.
- Burial teams must be identified for each region, trained and given resources, including PPE, safe burial materials (e.g. chlorine, body bags) and transport appropriate for human remains.
- Emergency technicians should have further training in transporting EVD patients, infection prevention and control (including practical exercises with PPE) and disinfection of conveyances.
- There appears to be an insufficient number of ambulances and other conveyances that are prepared for EVD patients. A needs assessment should be conducted to determine the appropriate number of EVD-prepared ambulances and other conveyances that are required for the EVD response.

7. Infection prevention and control

Insufficient information was available at the time of the mission to identify gaps or to make recommendations about training in infection prevention and control, the availability of PPE and other necessary materials and education campaigns for infection prevention and control. The information below addresses only the capacity of facilities to isolate suspected cases.

Strengths

- All facilities have been instructed to prepare an isolation or holding centre for suspected cases of EVD while they await laboratory results.
- 10 000 PPE kits have been procured and distributed to regions and facilities, although the extent of distribution and the adequacy of the kits is unclear.
- The manual of infection prevention and control protocols and guidelines has been revised to include EVD. Plans are in place to distribute the manual to regional hospitals and community health planning services.[1]

Opportunities for improvement

- There is no technical manual describing the specifications for an isolation unit or early case management protocols.
- Assessment of facilities to ensure that isolation or holding centres have been prepared and meet specifications must be completed.
- Assessment of facilities to ensure an adequate supply of the materials required for triage and proper isolation (e.g. PPE) must also be completed.
- It is unclear whether the PPE that has been distributed will provide adequate protection against EVD. All PPE to be used for the isolation and treatment of suspected and confirmed cases of EVD should conform to WHO specifications.[2]

8. Laboratory

Strengths

- The Noguchi Memorial Institute for Medical Research has been identified as responsible for laboratory testing of possible EVD cases; 116 samples taken from suspected cases have already been tested at this facility.
- Sufficient numbers of laboratory staff at the Institute have been trained in EVD testing.
- Protocols for sample collection are in place.

Opportunities for improvement

- A second laboratory (the Kumasi Centre for Collaborative Research) for testing suspected cases of EVD has been identified but is not yet operational.
- A clear mechanism should be established for confirmatory testing of laboratory results at WHO collaborating centres; 50 negative samples and the first 25 positive samples should be sent fir confirmation to a collaborating centre.
- Protocols for sample collection and triple packaging should be more widely distributed, especially at district level.
- Standard protocols for domestic transport of laboratory samples and formal arrangements with potential transporters should be in place.

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[1] This information was obtained from the Ministry of Health after the assessment by the preparedness strengthening team was completed but before publication of the report.

[2] WHO. Personal protective equipment (PPE) in the context of filovirus disease outbreak response. Technical specifications for PPE to be used by health workers providing clinical care for patients. Geneva; October 2014 (WHO/EVD/Guidance/SpecPPE/14.1) (http://apps.who.int/iris/bitstream/10665/137411/1/WHO_EVD_Guidance_SpecPPE_14.1_eng.pdf?ua=1&ua=1).

Social mobilization and risk communication

9. Social mobilization

Strengths

- An active subcommittee for social mobilization and risk communication is already in place, with representatives of a number of Government and nongovernmental partners.
- A toll-free hotline is being set up so that the public can access accurate, timely information on EVD and report possible cases.
- A budget has been set aside for a wide range of risk communication work.
- Educational materials have been developed and deployed to regional hubs.
- A limited television and radio EVD education campaign has been broadcast, and various media bodies have pledged to assist in its expansion.
- The subcommittee is in communication with various traditional and religious leaders.
- Sociological research on areas relevant to EVD surveillance and response (e.g. burial practices, health-seeking behaviour and community perceptions of EVD) is due to begin shortly.

Opportunities for improvement

- During the assessment, it became apparent that the social mobilization and risk communication technical subcommittee was not adequately represented in the EVD emergency operations centre.
- Lack of communication and coordination between this and the other subcommittees is limiting the effectiveness of current EVD preparedness activities.
- At present, the rapid response team does not include a social mobilization specialist; this has negative implications for successful community entry should an EVD outbreak occur.
- At present, WHO-recommended national and subnational social mobilization teams, or equivalent groups in terms of skills and capacity, are not in place.
- While a number of relevant partners, both Government and nongovernmental, are represented on the social mobilization subcommittee, clear leadership with appropriate expertise is required.
- Possible avenues for social mobilization in the event of an EVD outbreak have been identified; however, a clear plan for responding to an event, including the specific tasks and roles of the relevant groups and individuals, is lacking.
- A unified strategy is clearly needed for engaging with the press, from the national level down to the local level, to help prevent uncontrolled release of unconfirmed information and the spread of misinformation in general.
- At present, there is no mechanism in place for media monitoring.
- At present, there is no infrastructure in place for monitoring, investigating and responding to rumours.

Logistics, security and financial resources

10. Budget

Strengths

- Resources for several key areas have been identified, and budgets have been made available. An undetermined amount of support is available, and partners appear to be prepared to provide further support once areas for improvement are clearly identified.

- WHO is supporting mapping of existing offers of support.

Opportunities for improvement

- Not all the resources and materials required to manage an EVD outbreak have been identified. A budget based on prioritized needs should be prepared, in line with a revised plan.
- While WHO has been supporting an inventory of support from partners, better communication should be established between WHO as the point of contact, the Ministry of Health and partners in order to ensure that the inventory is complete, that areas that require further support are easily identified and that partner activities are coordinated so as to avoid duplication of effort.
- A process for transferring money rapidly from central to local level for emergency use has not been established. This is essential for the mobilization of local resources during an outbreak.

Conclusions and next steps

The mission of the preparedness strengthening team to Ghana identified many activities and areas that can be considered a solid foundation for further strengthening Ghana's preparedness for an EVD event. Government officials and stakeholders in a broad range of jurisdictions and disciplines have already done a considerable amount of work. At the same time, much work must be accelerated, and further support and resources will be required.

On the basis of the information obtained during the mission, the team came to a consensus on a number of areas that require immediate and longer-term attention. Keeping in mind economic constraints and the seemingly overwhelming amount of work that must be initiated or completed, the team identified the steps necessary to strengthen preparedness over periods of 30, 60 and 90 days. Although many activities require completion within 30 days, when the opportunity exists, the following five response components should be fully operational to allow an immediate response in the case of an EVD event:

- Confirm that case definitions have been distributed to all regional and district health service offices and local health care facilities and that staff in high-risk areas have received appropriate training in using the case definitions to identify cases of EVD.
- Establish a fully functional emergency operations centre, including complete coordination mechanisms.
- Fully staff rapid response team(s), and ensure that the teams are coordinated and have resources.
- Ensure that the EVD treatment centre(s) and its staff are fully prepared to receive EVD patients.
- Identify and implement a data management system for contact tracing, and train staff in its use.

Annex 1. Preparedness strengthening team

Organization	Name	Function or role
WHO	Paul Cox	Leader, preparedness strengthening team
WHO Country Office	Robert Kwame Agyarko	Assistant coordinator, consultant
WHO Country Office	Sally-Ann Ohene	Disease prevention and control
WHO Country Office	Henry Kyobe Bosa	Consultant on case management
WHO Country Office	Lawson Ahadzie	Epidemiologist, consultant
WHO	Freya Jephcott	Consultant on community awareness and social mobilization
WHO	Daniel Eibach	Consultant on laboratory preparedness
WHO	Ian Clarke	Coordinator, preparedness exercise
CDC	Dana Cole	Consultant on epidemiology and contact tracing

In attendance

Organization	Name
Adventist Development and Relief Agency, Ghana	Joel Anim
African Development Bank, United Nations Mission for Emergency Ebola Response	Caroline Jehu-Appiah
Australian High Commission	Kate O'Shaughnessy
Care International	Rigot Auoe
Canadian High Commission	Naithieu Kimmell
Canadian High Commission	Awik Desmedos-Raggic
Canadian High Commission	Hong Won Yu
Swedish National Export Credits Guarantee Board	Theophilus Ayugane
European Union	Janet Rentoo
French Embassy	Pierre Kervennal
	Francesco Torcoi
Gesellschaft fur Internationale Zusammenarbeit (Germany)	Sarah Sena Jensen
Ghana Armed Forces, 37th Military Hospital	Cdr Edward O. Nyarko
Ghana College of Physicians and Surgeons, Faculty of Public Health	Anthony Ashinyo
Ghana College of Physicians and Surgeons	Antobre Boateng
Ghana College of Physicians and Surgeons	Apanya Paschal
Ghana College of Physicians and Surgeons, Faculty of Public Health	Chrysantus Kubio
Ghana College of Physicians and Surgeons	Prince Baah Vaness
Ghana College of Physicians and Surgeons, Ministry of Health	Maureen Martey
Ghana Health Service	Asiedu-Bekoe
Ghana Health Service, Ghana College of Physicians and Surgeons, Faculty of Public Health	Lilian Addai
Ghana Health Service, Health Partners Denmark	Seth Adjei
Ghana Health Service, Health Partners Denmark	Esther Adu
Ghana Health Service	Moses Djimatey
Disease Surveillance Department, Ghana Health Service	Kwame Achempem
Ghana Health Service	Nii Lante H Mills
Disease Surveillance Department, Ghana Health Service	Emmanuel Dzotsi
Ghana Health Service	Kwaku Owusu
Ghana Health Service	Moses Djimatey
Ghana Health Service	Jacob A. Andoh
Ghana Health Service	Badu Sarkodie
Ghana Health Service	Kwaku Owusu
Ghana Health Service	Edith Clarke
Ghana Health Service	David Opare
Ghana Health Service	Ebenezer Appiah Denkyira
Ghana Health Service	Rebecca Ackwonu

Ghana Health Service	Franklin Asiedu-Bekou
Ghana Health Service	Samuel Kaba
Ghana Police	Samuel Otu-Nyarko
Ghana Red Cross	Thomas Aapore
Ghana Red Cross	Ahmed Saidu
Global Communities	Albato Wible
International Organization for Migration	Kazumi Nakamura
Japan International Cooperation Agency	Akiko Ito
Japanese Embassy	Etusko Ito
Jhpiego	Chantelle Allen
Kofin	Shinye Lee
Korea International Cooperation Agency	Diah Ayu
Korea International Cooperation Agency	Hae-IT Kang
Korle Bu Teaching Hospital	Philip K Amoo
Ministry of Health	Victor Bampoe
Ministry of Health	Boi Kikimoto
Ministry of Health	Elizabeth Adjei Acquah
Ministry of Health	Festus Adams
National Ambulance Service	Akamah J.A
National Ambulance Service	George Ashie
National Ambulance Service	Patrick Sam
Noguchi Laboratory	Prof. William Ampofo
Noguchi Laboratory	Kofi Bonney
Noguchi Laboratory	Kwadwo Koramm
Operations Eyesight University	Emmanuel Kumah
Operations Eyesight University	Boateng Wiafe
Port Health, Tema	Albert A. Quansah
Port Health, airport clinic	Nana Ako Brew
Port Health, Kotoka International Airport	Raphael Marfo
Right to Play	Portia A Agyekum
UNAIDS	Hellen Odido
UNAIDS	Henry Nagai
UNDP	Belynda Amarkwa
UNICEF	Rushnan Murtaza
UNICEF	Fabrice Lauretin
UNICEF	Surani Abeyesekera
United Kingdom Department for International Development	Shamwill Issah
United Kingdom Department for International Development	Suvou Clapham
United Nations Mission for Emergency Ebola Response	Simon Ruf
United Nations Resident Coordinator's Office	Wolfgang Haas
United Nations Resident Coordinator's Office	Bianca Anderson
United Nations Resident Coordinator's Office	John Sule
United Nations Special Envoy Office	B M Closkey
University of Ghana Medical School, Korle-Bu Teaching Hospital	Margaret Lartey
University of Manchester	Hannah Freericks
US Defense Threat Reduction Agency	Major Bradley Waite
US Centers for Disease Control and Prevention	Celia Woodfill
US Centers for Disease Control and Prevention	Brenna VanFrank
US Centers for Disease Control and Prevention	Tasha Stehling-Ariza
US Naval Medical Research Unit 3, national technical coordinating committee	Nehkonti Adams
WHO Country Office	Samuel Hagan
WHO Country Office	Magda Robalo
World Bank	Beatrix Allah-Mensah
World Bank	Erica M. Daniel
World Food Programme	Mohammed Habib Adam

Annex 2. Mission agenda

Day 1. 10 November	Activity	Responsible entity	Observations
8:30–12:00	Meeting with WHO Representative	Team leader	WHO Country Office
13:00–14:00	Lunch		
14:00–17:00	Meeting with the Deputy Minister and national Ebola task team	Preparedness strengthening team	Ministry of Health conference room
17:00–17:30	Conclusions	Preparedness strengthening team	
Day 2. 11 November			
9:00–10:30	Meeting with the national authorities (Ministry of Health) and other partners (including Médecins sand Frontières, International Rescue Committee, Red Cross, United Nations Country Team, Asian Development Bank, US Agency for International Development, CDC, health development partners, nongovernmental organizations)	Preparedness strengthening team, WHO Country Office	Miklin Hotel
10:30–10:45	Break		
10:45–13:00	Meeting with national authorities (as above)		
13:00–14:00	Lunch		
14:00–17:00	Field visits • Ebola treatment centre • Points of entry • Laboratory • Emergency operations centre	Preparedness strengthening team	
17:00–17:30	Conclusions	Preparedness strengthening team	Planning for next day

Day 3. 12 November	Activity	Responsible entity	Observations
9:00–10:30	Table-top exercise	Preparedness strengthening team	Miklin Hotel
10:30–10:45	Break		
10:45–13:00	Table-top exercise	Preparedness strengthening team	
13:00–14:00	Lunch		
14:00–17:00	Review of table-top exercise and identification of remedial actions	Preparedness strengthening team	
17:00–17:30	Conclusions	Preparedness strengthening team	Planning for next day
Day 4. 13 November			
9:00–10:30	Task groups prepare a draft report on the findings of the exercise	Preparedness strengthening team and group work	Miklin Hotel
10:30–10:45	Break		
10:45–13:00	Presentation of draft reports	Preparedness strengthening team and group work	
13:00–14:00	Lunch		
14:00–17:00	Consensus findings (field and exercise) and priorities	Preparedness strengthening team	
	Improvement plan	Preparedness strengthening team and group work	
17:00–17:30	Summary of the day and overview of next day	Preparedness strengthening team	
Day 5. 14 November			
8:00–10:00	Finalize draft plan for improvement	Preparedness strengthening team	Miklin Hotel
10:00–12:00	Present findings and draft to stakeholders	WHO Representative and preparedness strengthening team	
13:00–14:00	Lunch		

14:00–16:00	Finalize the report and improvement plan in the light of amendments	Preparedness strengthening team
16:00–17:00	Mission report and final improvement plan	WHO Representative and preparedness strengthening team

Annex 3. Component-specific assessment

Component 1. Overall coordination

	Task	Within (days)	Yes/No	Comment*
1.1	**Emergency & epidemic committees / Ebola task force (ETF)** Existence of multisectoral, functional, Ebola task force (ETF)/Committee and technical subcommittees at national and district levels; Pre-existing emergency/epidemic committee transitioned into an ETF	30 (national) 60 (subnational) 90 (district)	Yes/No	Exists at national level but not at subnational level. Ensure that the activities of the national technical coordinating committee feed into the work of the emergency operations centre.
1.2	Membership to the ETF at national and sub-national level in "at risk" districts reviewed and updated, and every one informed of the roles and responsibility	30	No	Subnational levels must be defined. At-risk districts must be identified.
1.3	Technical sub-committees of the ETF with focal points and clear mandate constituted		Yes	
1.4	Existence of clear terms of reference of ETF and technical sub-committees		Yes	
1.5	Established procedures for command & control, coordination mechanisms, clearance of key technical and information products	30	No	Clarification and structuring of command and control system required
1.6	Country UN office is coordinating donor support at the country level	30	Yes/No	WHO maintains a matrix but currently does not track all training provided by partners. The emergency operations centre should take the lead in coordinating all training activities.
1.7	Review of current policy and legislative frameworks to ensure that they will provide the authorization for the preparedness measures (including financing)	30	No	National plan should be updated to reflect current guidance from chief of staff on leadership, key roles and responsibilities for Ebola response
1.8	Emergency operations centre (EOC)/ Incident management structure (IMS): Establish nationally to cover areas of low and high population density		Yes/No	Two thirds of staff in place, and a system to staff remaining positions is being developed.

1.9	Identify, train and designate Incident Manager and Operations Manager		Yes/No	Training in incident management is not complete.
1.10	Demonstrate success during drills	30	No	
1.11	Establish personnel at the subnational level for localized EOC/IMS coordination and management	30	No	Suggest that Ghana determine the requirement for a subnational emergency operations centre and designate and train personnel
1.12	Develop plans for communication channels within EOC/IMS and between EOC/IMS and the public	30	Yes	Suggest clarification and validation of existing procedures in exercises
1.13	Clearly assign communication responsibilities to specific EOC/IMS roles	30	Yes	Suggest clarification

* **The purpose of the assessment is to check the functional capacity of the various elements, either alone or integrated, as applicable**. For example, if an emergency operations centre is identified, the assessment should check the frequency of when it was last tested, any evaluation conducted and how the lessons learnt were used.

Component 2. Rapid response team

	Task	Within (days)	Yes/No	Comment*
2.1	Identify and assign members of the teams	30	Yes	Identify and assign national (2), regional (10) and district (5/region) rapid response team members and provide orientation with standard operating procedures.
2.2	Train medical staff on EVD RRT	30	No	Prioritize training of staff in facilities in which patients with suspected EVD will be isolated and treated.
2.3	Train medical staff using WHO-AFRO modules applied in Liberia, including mock Ebola treatment centre (ETC)	30	No	
2.4	Identify a space in an existing health facility and turn it into a fully functioning ETC	60	Yes	A single Ebola treatment centre in Tema Hospital is nearing completion. Two more independent centres planned
2.5	Map potential health facilities at the district level that can be turned into ETCs at short notice.	Complete	Yes	
2.6	Identify and train community volunteers.	60	No	Plans are in place to identify and train community health nurses and Red Cross volunteers, but this has not started.
2.7	Train the epidemiologists in subnational RRT as part of the second level 24h/7 hotline service	60	No	Currently transforming hotline service to a call centre with trained operators. No standard operating procedure or communication algorithm
2.8	Ensure that there is no cash-flow problem and a contract-facilitation	30	No	

	mechanism			
2.9	In the absence of an EVD case in the country after 60 days, conduct at least one simulation exercise to maintain capacity	30	No	Training, including a simulation exercise, is planned but has not started.

*__The purpose of the assessment is to check the ability of the rapid response team to address critical needs and immediate priorities in order to protect at-risk communities in the earliest phase of an outbreak.__ Aspects to be confirmed could include the existence of a rapid response team roster, expertise in viral haemorrhagic fevers, fit-for-purpose surveillance and transport.

Component 3. Public awareness and community engagement

	Task	Within (days)	Yes/No	Comment*
3.1	Develop or adapt, review, translate into local languages and disseminate targeted messages for media, health care workers, local and traditional leaders, churches, schools, traditional healers and other community stakeholders	30	Yes	On-going
3.2	Identify and engage influential/key actors/mobilisers, such as religious leaders, politicians, traditional healers, and media in urban and rural areas	30	Yes	On-going
3.3	Map out public communication capacities and & expertise within health and other sectors	30	No	Commitment to do this immediately
3.4	Identify and establish mechanisms for engagement with national networks for social mobilization.	30	No	
3.5	Identify established functional communication coordination mechanism involving all government sectors and other stakeholders (including civil society organisations and communities)	30	No	Informal communications have been issued, but no formal or exhaustive list exists
3.6	Establish coordination mechanism for engaging with the community (involving the traditional leaders, relevant sectors in a bottom-up approach)	30	Yes	Largely disparate groups
3.7	Establish coordination mechanism for engaging with partners (e.g. NGOs)	30	No	Informal collaborations are in place, but no clear, comprehensive mechanism is in place.
3.8	Draw up a roster with clear roles and responsibilities for internal and external communications and spokespersons	30	No	
3.9	Establish functional and timely procedures for review, validation and clearance of information products	30	No	

3.10	Identify and train spokespersons and communication team	30	Yes/No	Some action has been taken, but no coordinated or comprehensive activity has been attempted.
3.11	Develop a comprehensive strategy, plan and budget for engaging with the media and public (including a scaled-up approach)	30	Yes/No	A preliminary budget has been set aside for activities, but there is no clear budget for activities in the event of a confirmed case.
3.12	Establish a system for rumour monitoring, investigation and response	30	No	A hotline for advice and for reporting suspected cases is being set up by UNICEF, but no media-monitoring programme has been developed. Some community networks could also be used for this purpose, but no plan exists at present.
3.13	Establish a plan for reviewing, revising and monitoring impact of communication strategy	30	Yes/No	This is planned, but no clear strategy has as been developed.
3.14	Identify critical communication networks (TV, radio, social media, SMS, story tellers, theatre) and plan for use in appropriate languages	30	Yes	
3.15	Establish media monitoring mechanisms with appropriate tools	30	No	At present, there are no plans for a media-monitoring programme.

***The purpose of the assessment is to check the means, system, trust and ability to engage with community and voluntary sectors.**

Component 4. Infection prevention and control

	Task	Within (days)	Yes/No	Comment*
4.1	Provide health facilities with basic hygiene, sanitation, disinfection/protective equipment and posters. Priority should be given to hospitals; then health centres in high risk areas (started in 30 days and to cover priority districts in 60 days)	30–60		No specific information on status of observation of infection prevention and control in facilities available
4.2	Increase the general awareness about hygiene and how to effectively implement infection prevention and control (started in 30 days and completed in 60 days for priority districts)	30–60		No specific information available
4.3	Identify health facilities for setting up basic isolation units (2 beds) for suspected cases in all major hospitals and all border points	30	Yes	All facilities have been directed to set up basic isolation units. Not clear what technical guidance has been

	(ideally regional and district hospitals).			provided. No assessment to ensure that isolation units exist and meet specifications
4.4	Establish a compensation and benefits package for health care workers (HCWs) for: – remuneration and motivation for high-risk assignment; – in case of infection and death	30		No specific information on the package available

***The purpose of the assessment is to check the means, system, training and ability to ensure optimal, safe working conditions, including record of completion of training, reporting and audit procedure**.

Component 5. Case management

5a. Ebola treatment centre

	Task	Within (days)	Yes/No	Comment*
5a.1	Set up at least one facility with trained staff, adequate supplies, ready to provide care to a patient or cluster of patients with suspected EVD. This facility should cater for 15 patients initially.	30	Yes	12-bed Ebola treatment centre set up in Tema Hospital, and team trained. First simulation conducted Necessary logistics being procured Modifications to make it functional pending Requires a subsequent "dry run" exercise when all the modifications are complete
5a.2	Equip and adequately train ambulance teams to transport suspect EVD cases.	60	Yes	Three ambulances assigned for EVD out of expected 20 Funds needed for rehabilitation of the rest Protocols for transport of suspected EVD cases by ambulance not available Infection prevention and control training required for ambulance crews Training and logistics requirements of the ambulance service presented to the emergency operations centre: awaiting response
5a.3	Identify health facilities at district level that can be turned into an ETC at short notice	60	No	Facilities (regional, teaching, police and military hospitals) have been designated as potential Ebola treatment centres, in addition to zonal treatment centres. Resources needed for assessment of the level of readiness at these sites

5a.4	Identify health facilities at local level that can be turned into an ETC at short notice	60	Yes	Facilities have been directed to designate holding rooms. Standard checklist for designation of holding rooms required Resources needed for monitoring to assess whether this has been done

***The purpose of the assessment is to check the operational capacity to safely treat cases of EVD or other viral haemorrhagic fever, including the availability of qualified doctors and associated health care staff.**

5b. Safe burials

	Task	Within (days)	Yes/No	Comment*
5b.1	Develop SOPs for safe burials and decontamination	30	No	Generic burial standard operating procedures available but not yet adapted
5b.2	Identify appropriate secured burial ground with agreement of the community	30	No	As the treatment centre is in Tema, the emergency operations centre must contact the Tema Municipal Assembly to designate burial grounds, in consultation with traditional leaders.
5b.3	Train burial team (8 people)	30	No	Emergency operations centre to contact the Tema Municipal Assembly to identify a burial team for training
5b.4	Ensure that a dedicated transportation process is in place to bury human remains safely	30	No	Emergency operations centre to designate dedicated vehicle to transport human remains

***The purpose of the assessment is to check whether trained staff or volunteers and the right, adequate personal protective equipment are available and readily accessible to conduct dignified burials.**

Component 6. Epidemiological surveillance

	Task	Within *(days)*	Yes/No	Comment*
6.1	Establish a 24/7 hotline with escalation facilities with medically trained staff	30	Yes/No	Current hotline manned by public relations officers Uncertain medical technical back-up algorithm With UNICEF, transforming hotline service to a call centre with trained operators No standard operating procedures or communication algorithms available Call centre cannot currently triage community-

				reported suspected cases
6.2	Train the hotline staff on case identification and management of communication with potential cases	60	No	Plan to establish standard operating procedures for call centre personnel to collect necessary information and notify appropriate contacts
6.3	Provide guidance (case investigation forms, standard case definitions to all countries)	30	Yes	Completed; not clear whether distribution to all health facilities complete
6.4	All countries to test existing IDSR systems for Ebola, identify gaps and start implementation of corrective actions where necessary	30	Yes	Over 100 samples from suspected cases already processed within existing Integrated Disease Surveillance and Response system Plan in place to analyse these data to identify gaps
6.5	Establish immediate lines of reporting for suspect cases, clear responsibility for such actions		Yes	Reporting systems established, and structure in place
6.6	Identify human resources for community surveillance (community HCWs, Red Cross/Crescent volunteers, NGOs, midwives, healer, leaders etc.)	30	Yes	Have begun to collect contact lists of community health nurses, but must identify additional resources from Red Cross and other nongovernmental organizations
6.7	Provide Technical Assistance and training to address the still existing gaps in IDSR	90	No	Plan to provide additional training on reporting and completing surveillance forms and a simulation exercise to assess remaining gaps
6.8	Distribute case definitions to all provincial, district levels and healthcare facilities; provide training on the case definition	60	Yes	Case definitions sent to all districts, to be distributed to health care facilities; however, no site visits to assess the completeness of distribution Train-the-trainer courses provided, with a plan for trained personnel to train at local level
6.9	Disseminate simplified case-definitions for community use	60	Yes	Dissemination of simplified case definitions prioritized in five health districts or regions with isolation hospitals for suspected cases; will extend dissemination to other districts over time

***The purpose of the assessment is to check whether surveillance is operational and tested.**

Component 7. Contact tracing

	Task	Within (days)	Yes/No	Comment
7.1	Train the teams at both national and subnational levels from RRTs and ToT on contact tracing and data management	30	Yes/No	Have provided training in surveillance and contact tracing to national and regional members, but orientation workshop needed for teams Currently identifying a data management system for collecting contact-tracing data in the field
7.2	Provide UNMEER with list of required equipment and materials for contact tracing at National and sub-national levels	30	Yes	Have identified requirements but have not provided the information to the Mission
7.3	Train staff at district level on contact tracing	60	Yes	District-level teams (5/region) to be trained and given standard operating procedures and contact information for ambulance stations designated as having trained staff and capacity for transporting EVD patients
7.4	Train staff at sub district and community level on contact tracing	60	Yes/No	Plan in place to identify supervisors, reporting structure and contact tracers at district and community levels Will be completed within the next 30 days; training will begin during the 30 days after that.

Component 8. Laboratory

	Task	Within (days)	Yes/No	Comment*
8.1	For each district, identify laboratory responsible for analysis and /or specimen handling of biological samples and mode of transport for samples	30	Yes	Two laboratories have been identified. One laboratory (Noguchi, Accra) has started to process samples. The second laboratory (Kumasi Centre for Collaborative Research) will be operational in February 2015.
8.2	Stand-by arrangements and agreements with WHO Collaborating Centres for confirmatory testing in place	30	No	Only one negative sample has been sent for confirmation so far.
8.3	Stand-by arrangements and agreements with relevant air-lines to ship samples from suspected cases to WHO collaborating Centres in place	30	Yes/No	Links have been established with World Courier.

8.4	Availability of resources to facilitate transportation and shipment of specimens	30	Yes/No	No dedicated cars are available for transporting samples.
8.5	Existence of protocol for: – sample collection; – referral and shipment of specimens from suspect EVD cases to designated laboratory for confirmation	30	Yes	Protocols are in place but not yet distributed to districts
8.6	Laboratory personnel trained on procedures for specimen collection, packaging, labelling, referral & shipment, including handling of infectious substances	60	Yes/No	The exact number of trained staff is unknown. Training for regional staff has been started. Staff at district level are not yet trained.

***The purpose of the assessment is to ascertain the availability of trained staff, expertise, consumables and transport for the handling and diagnosis or inactivation of biological samples.**

Component 9. Capacities at points of entry

	Task	Within (days)	Yes/No	Comment
9.1	Identify PoE teams to cover 24/7, to assist travelers and ensure correct isolation if required	30	Yes	Teams (two nurses, one immigration official and one security personnel) to be identified at 20 of the 42 points of entry
9.2	Deliver identified supplies (9 full sets of personal protective equipment (PPE) at each PoE Medical equipment to survey cases 3 infrared hand held thermometers, 1 scanner, 2 observation room/ 2 health facilities and supplies for safe isolation and observation of suspect cases if possible separation room, if not, a separated area. Depending on the geographical location, 1 Ambulance) to PoEs. Every PoE needs to have either a separation room of a dedicated area for holding suspected cases.	60	Yes/No	Obtain and deliver identified resources for 38–41 points of entry. Currently, two sets of PPE; uncertain of status of other equipment
9.3	Train staff on IPC (Training of trainers)	30	Yes/No	Heads of staff at points of entry, but not all operational staff trained Need computers and other resources to complete training
9.4	Identify “holding” centre/area	30	Yes/No	Completed at two points of entry; needed at an additional 40 points of entry No clear technical assistance (i.e. manual of specifications for holding area)
9.5	Ensure that a health emergency contingency plan is in place at high risk PoE (ports, airports, and ground crossings)	30	Yes/No	All 42 points of entry have plans, but should verify that all staff have and understand the plans and can implement them

9.6	Equip and appropriately staff sites for health assessments and management of suspected ill travellers at all PoE	60	Yes/No	Establish observation rooms at 40 points of entry, and provide equipment as outlined in 9.2.
9.7	Available standard operating procedures (SoPs) to identify, manage and refer suspected ill patients from PoE to designated hospitals /isolation facility	30	Yes/No	Standard operating procedures developed but not in place at all points of entry Use of standard operating procedures to be assessed at each point of entry.
9.8	Review and test current communication system between health authorities and conveyance operators at PoE, and national health surveillance systems	30	Yes/No	Plan in place to review and test emergency communication system
9.9	Sensitize public health authorities at PoE to EVD, review their roles and processes for handling, reporting and for referral of suspected cases of EVD	30	Yes/No	Completed for fewer than 22 of 42 points of entry
9.10	Avail SOP for implementing exit screening in the event of a confirmed EVD outbreak	30	Yes/No	Completed at 1 of 42 points of entry
9.11	Review systems and procedures for implementation of health measures related to IPC	60	Yes	Have a plan for review and conducting simulation exercises, but need funds to implement the plan

Component 10. Overall budget for outbreak

	Task	Within (days)	Yes/No	Comment
10.1	Define operational budget for activities (communication, enhanced surveillance, investigation, etc.), pre-epidemic detection and for the preliminary response	30	Yes/No	
10.2	Identify funding sources, including allocation of domestic resources and mechanisms to raise additional resources when necessary, has been put in place and is known	30	Yes/No	
10.3	Develop templates for resource mobilization and for country and donor reporting, including mechanisms to monitor and track implementation	30	No	
10.4	Establish easily accessible contingency funds for immediate response to outbreak of EVD at national and other appropriate sites	30	No	
10.5	Identify the process to transfer money from central level to local emergency use	30	No	

Annex 4. Action points

1. Coordination

1.1 Update the national plan.
Prepare EVD plans at subnational (regional and district) levels to ensure that clear responsibilities are identified at local level.

1.2 Establish version control and process for distributing national and regional EVD plans.

1.3 Prepare EVD operational plans for each of the five technical subcommittees.

1.4 Develop a national governance framework for public health emergency planning and response in light of the broad role legislated to the NDMO.

1.5 Develop a health emergency management programme (preparedness, response and recovery). Continue and accelerate development of the health emergency operations centre.

2. Surveillance

2.1 Conduct assessment to confirm distribution of the case definitions, case report and investigation form and reporting protocol to health facilities.

2.2 Train key staff at district and community levels in the case definitions, reporting processes and completion of surveillance forms.

2.3 Establish infrastructure and mechanism for monitoring, investigating and responding to rumours of suspected cases.

2.4 Establish a hotline that has the capacity (with protocol, script or algorithm) to serve as a rapid alert system for suspected cases reported by the community.

3. Rapid response teams

3.1 Clarify the structure of rapid response teams and the interaction among team members. Orient team members to their team structures.

3.2 Develop protocols for activation, deployment and communication for identified rapid response teams.

3.3 Constitute rapid response teams to include all the expertise required, including logisticians and social mobilization experts.

3.4 Put in place logistics mechanisms to ensure that rapid response teams have access to transport and the materials and supplies required for response.

4. Contact tracing

4.1 Identify and implement an electronic data management system for contact tracing.

4.2 Provide the necessary resources and materials for data collection in the field with the identified data management system.

4.3 Define a clear supervisory system and reporting structure for contact tracing at district and community levels.

4.4 Accelerate training for contact tracers at district and community levels.

4.5 Develop protocols and operating procedures to deal with individuals who are resistant to or non-compliant with contact tracing.

5. Points of entry

5.1 Train points-of-entry teams in case definition, correct isolation, infection prevention and control, reporting and referral processes.

5.1 Provide points of entry with adequate resources and materials (e.g. PPE, soap, disinfectant) so that they can provide appropriate screening and isolation.

5.3 Provide points of entry with technical guidance and specifications on isolation or holding areas for suspected cases.

5.4 Assess points of entry to ensure that protocols for identification and management of suspected cases are in place and are being used correctly.

6. Case management

6.1 Modify the Ebola treatment centre at Tema Hospital to make it functional before an EVD case occurs, and ensure that case management teams are fully prepared to receive and care for EVD patients.

6.2 Continue to sensitize health care workers to EVD as a differential diagnosis for febrile illness to ensure facility-based surveillance and early case detection.

6.3 Continue to educate health care workers on the clinical manifestations and management of potential EVD cases.

6.4 Complete cascading of training for case management teams in all regions.

6.5 Conduct assessments of the readiness of all health facilities to identify, isolate and refer suspected cases of EVD.

6.6 Develop safe burial protocols. Identify, train and provide resources to burial teams.

6.7 Continue training teams of emergency technicians in transporting EVD patients, infection prevention and control and disinfection.

6.8 Conduct a needs assessment to determine the number of EVD-prepared ambulances and other conveyances.

7. Infection prevention and control

7.1 Prepare a technical manual giving the specifications for an isolation unit and early case management protocols.

7.2 Assess facilities to ensure that isolation or holding centres are prepared, meet specifications and have adequate supplies of the materials required for triage and proper isolation (e.g. PPE).

7.3 Ensure that the PPE available is appropriate and adequate for the prevention and control of EVD infection and meets WHO specifications.

8. Laboratory

8.1 Support operationalization of a second laboratory (Kumasi Centre for Collaborative Research) for testing samples from suspected EVD cases.

8.2 Implement confirmatory testing of laboratory results at WHO collaborating centres

8.3 Distribute protocols for sample collection and triple packaging widely, especially at district level.

8.4 Develop standard protocols for domestic transport of laboratory samples, and make formal arrangements with potential transporters.

9. Social mobilization

9.1 Prepare a clear social mobilization plan for responding to an EVD outbreak, including the specific tasks and roles of relevant groups and individuals if such an event occurs.

9.2 Develop a unified strategy for engaging with the press, from the national to the local level.

9.3 Develop mechanism for media monitoring.

9.4 Develop the infrastructure for monitoring, investigating and responding to rumours.

10. Budget

10.1 Draw up a prioritized, needs-based budget in line with a revised plan.

10.2 Improve communication between WHO as the point of contact, the Ministry of Health and partners to ensure that partner activities are coordinated, so as to avoid duplication of effort.

10.3 Establish a process for transferring money rapidly from central to local level for emergency use, to facilitate the mobilization of local resources during an outbreak.