Public Health England

Protecting and improving the nation's health

Report on the Ebola Preparedness Surge Capacity Exercise 10 March 2015 (FINAL DRAFT)

The report on the Ebola Preparedness Surge Capacity Exercise

The Ebola Preparedness Surge Capacity Exercise was delivered on 10 March 2015, supported by the Department of Health, NHS England, Public Health England and the National Ambulance Resilience Unit. This exercise was commissioned by NHS England to confirm a shared understanding of National Health Service and Public Health England capabilities and resources to manage multiple confirmed Ebola cases within England.

This report was prepared by Public Health England and agreed with NHS England and Public Health England.

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Executive summary

On 10 March 2015, a discussion-based exercise considered the current arrangements and capabilities of the four designated National Health Service surge centres in England to respond to multiple positive cases of Ebola in England. Participants in the exercise included representation from the Department of Health, Public Health England, NHS England, the National Ambulance Resilience Unit, appropriate Ambulance Services, Local Authority, the Health & Safety Executive, Public Health Wales and the Ministry of Defence.

The exercise was considered to be very relevant and a valuable opportunity for participants to share experiences and learning from the Ebola response. All participants confirmed the importance of building on the legacy from this response in order to maximise the benefit of all the training and work undertaken and the knowledge and skills gained over this period, which may have future benefit and broader applicability.

The key findings from this exercise included:

- A mechanism is required for sharing the learning from all the exercising, training, testing and real life experience that has come out of the response to Ebola
- As part of the legacy from the Ebola response, the Infectious Diseases Clinical Reference Group should consider the establishment of an Infectious Diseases Network to support the sharing of common standards and practices. This should be supported by future training plans and the development of a generic infectious diseases plan
- A review of capacity and capability of the surge centres is required, especially around the management of paediatrics
- Clarity is required on the triggers to move to a cohort model
- Clearer public messaging and information to other professional partners is required, especially regarding how the system works with stakeholders, local communities and Other Government Departments
- Training and exercising: ongoing investment in training and exercising is required, including the identification of national standards for infectious disease training across the NHS system. This should link to commissioning and staffing resilience

A full list of recommendations is included at Appendix A.

1. Introduction

This report describes the design, delivery and outcomes of an Ebola preparedness exercise that was held on Tuesday, 10 March 2015. The exercise was designed to consider the current arrangements and capabilities of the four surge centres in England and their options for surge capacity in response to multiple positive cases of Ebola Virus Disease (EVD). The four surge centres are: the Royal Free Hospital London NHS Foundation Trust; the Newcastle upon Tyne Hospitals NHS Foundation Trust; the Royal Liverpool and Broadgreen University Hospitals NHS Trust; and the Sheffield Teaching Hospitals NHS Foundation Trust. Representatives from the following Ambulance Services also participated: North East Ambulance Service; the North West Ambulance Service; the Yorkshire Ambulance Service and the London Ambulance Service.

The exercise provided participants with the opportunity to assess and review current clinical capabilities, protocols and resources as well as options for surge capacity arrangements that might be required in the management of multiple cases of confirmed EVD in England. Participants also considered the interdependencies between Health with Other Government Departments and the coordination of public messaging. The exercise was designed by Public Health England (PHE) with support from NHS England.

1.1 Background

There have been more than 24,000 cases of Ebola since the outbreak started in West Africa more than a year ago. Nearly 10,000 people have died. The most seriously affected countries are Sierra Leone, Liberia and Guinea. International agencies, including staff from the United Kingdom, continue to support the effort to contain the world's worst epidemic of the disease since 1976.

UKMed and the Liverpool School of Tropical Medicine have provided more than 2,000 staff to support the response activities in West Africa, and up to 700 UK defence personnel are based in Sierra Leone as part of efforts to tackle the largest ever outbreak of Ebola.

PHE continues to provide international staff volunteers for the Ebola Treatment Centre (ETC) laboratories sourced from PHE, the NHS, Public Health Wales, the Defence Science and Technology Laboratory and UK universities.

According to PHE's fortnightly Ebola update to partner organisations dated 10 February 2015, 177 people in the UK have been tested for Ebola and 3,447 people have been screened at ports of entry. The United Kingdom has robust, well-developed and well-tested systems for managing Ebola and the overall risk to the public in the UK continues to be very low. However, two UK patients have been successfully treated at the Royal Free Hospital, London during this current response to the Ebola outbreak.

Public Health England's Emergency Response Department was commissioned by NHS England to organise an exercise to consider the current arrangements and capabilities of the four designated surge centres in England and their options for surge capacity in response to multiple positive cases of Ebola in England.

2. Aim and objectives

2.1 Aim

The aim of the exercise was to confirm a shared understanding of NHS and PHE capabilities and resources to manage multiple confirmed Ebola cases within England.

2.2 Objectives

The objectives for the exercise were:

a) To explore and confirm the available clinical capabilities, protocols and resources

b) To explore and confirm the national outbreak control and coordination processes

c) To confirm surge capacity arrangements for multiple positive EVD cases

d) To explore interdependencies between Health and Other Government Departments

e) To explore and confirm the coordination of public messaging associated with multiple positive EVD cases

3. Scenario

The exercise was based on two scenarios and these formed the basis of group discussions followed by participant feedback and shared learning in plenary sessions. The scenario in the first session focussed on the health response and surge capacity arrangements in the management of a number of confirmed EVD cases in returning healthcare workers from West Africa. Scenario 1 was designed to run over a period of days, from 21-26 March 2015, and the session began with four confirmed EVD cases and one suspect case in England.

The second session considered the scenario of unreported cases of EVD in the community, including a paediatric case, and the impact on health capabilities and surge capacity arrangements. The timeline for Scenario 2 was from 9-12 April 2015.

4. Exercise format

4.1 Exercise Style

The surge capacity exercise was a one-day event which was delivered at a central location in London. The exercise consisted of facilitated discussions and a structured walk-through of the required response to the scenario(s) between senior health and communications officers from NHS England, Public Health England, the four surge centres, Directors of Public Health and the four relevant ambulance Trusts. A panel of Subject Matter Experts was also available to contribute and respond to any issues raised. It was also an opportunity for organisations to conduct their own self-assessment to analyse how their services and response linked in with overall strategy and policy direction.

Participants were grouped at tables based around their relevant surge centre to represent the surge centre health community. This included representation from NHS England, Public Health England, Ambulance Service, Director of Public Health, Communications officers and specialists. If there was a gap in representation at the table, the group was encouraged to seek advice from the panel of Subject Matter Experts. The participants were all located in one room and were encouraged to interact with each other to maximise on this learning opportunity.

4.2 Outline of the day

The exercise was opened by Gina Radford, Deputy Chief Medical Officer (DCMO), who provided some background and context for the exercise as well as endorsing the aim and objectives of the exercise. The DCMO also expressed genuine gratitude to all those people who have been involved in supporting the response and in providing assurance to Government of the UK's capability to manage Ebola cases in England.

After a detailed exercise briefing, updates from invited speakers on the work undertaken by their organisations during the Ebola response helped participants to think about the multi-layers of response activities that have been undertaken, the challenges they have met during this response and actions taken to improve any gaps or vulnerabilities. The invited speakers represented the Field Epidemiology Service; the Imported Fever Service; the National Ambulance Resilience Unit; and the Royal Free Hospital, London.

The day was divided into two scenario discussion sessions, each followed by a plenary feedback session. This was followed by a third session where table groups were given the opportunity to consider solutions to the issues raised in the previous sessions and to propose and allocate actions to address these.

At the start of each discussion session, participants were provided with a scenario and a number of questions to consider. These focussed on issues around preparation, alerting and notification; command, control and coordination; clinical resources, protocols and capabilities including surge capacity arrangements; cross-government interdependencies; and communications. The scenarios enabled participants to consider their understanding of current procedures, roles and responsibilities and capabilities; to share information; and to highlight potential areas of vulnerability. A facilitator at each table helped guide discussion through the issues raised in the scenario(s) provided, and a note taker captured the main issues, gaps and opportunities for improvement in a template on a laptop provided. These issues were then fed back during the plenary session by a spokesperson from each group.

A lead facilitator engaged and led the exercise participants through shared feedback and learning in the plenary sessions at the end of each scenario. With expertise in the direct treatment and management of Ebola patients, he was able to prompt and guide discussions to cover key areas and to probe into decisions and strategy and ask amplifying questions if required.

A final session enabled organisations and stakeholders to identify items for action planning and areas for further work and improvement. The outline programme of the day is included at Appendix B.

A whiteboard (Figure 1) was used to display the capacities of the four surge centres and at the start of each session, the Lead Facilitator invited the clinicians and medical staff from the four surge centres up to the whiteboard to discuss where the cases would be allocated. The cases were represented by Emergo Train System[1] style figures which provided a clear visual representation of patient allocation to the surge centres and whether they were managed in a Trexler unit (negative pressure isolator) or in a room with high level Personal Protective Equipment (PPE). The whiteboard also stated the impact of cases on the closure of other infectious disease beds in the hospital.

Participants had been encouraged to bring any relevant plans with them to the exercise for their use. A folder of reference material was also provided on each table which included maps and guidance documents.

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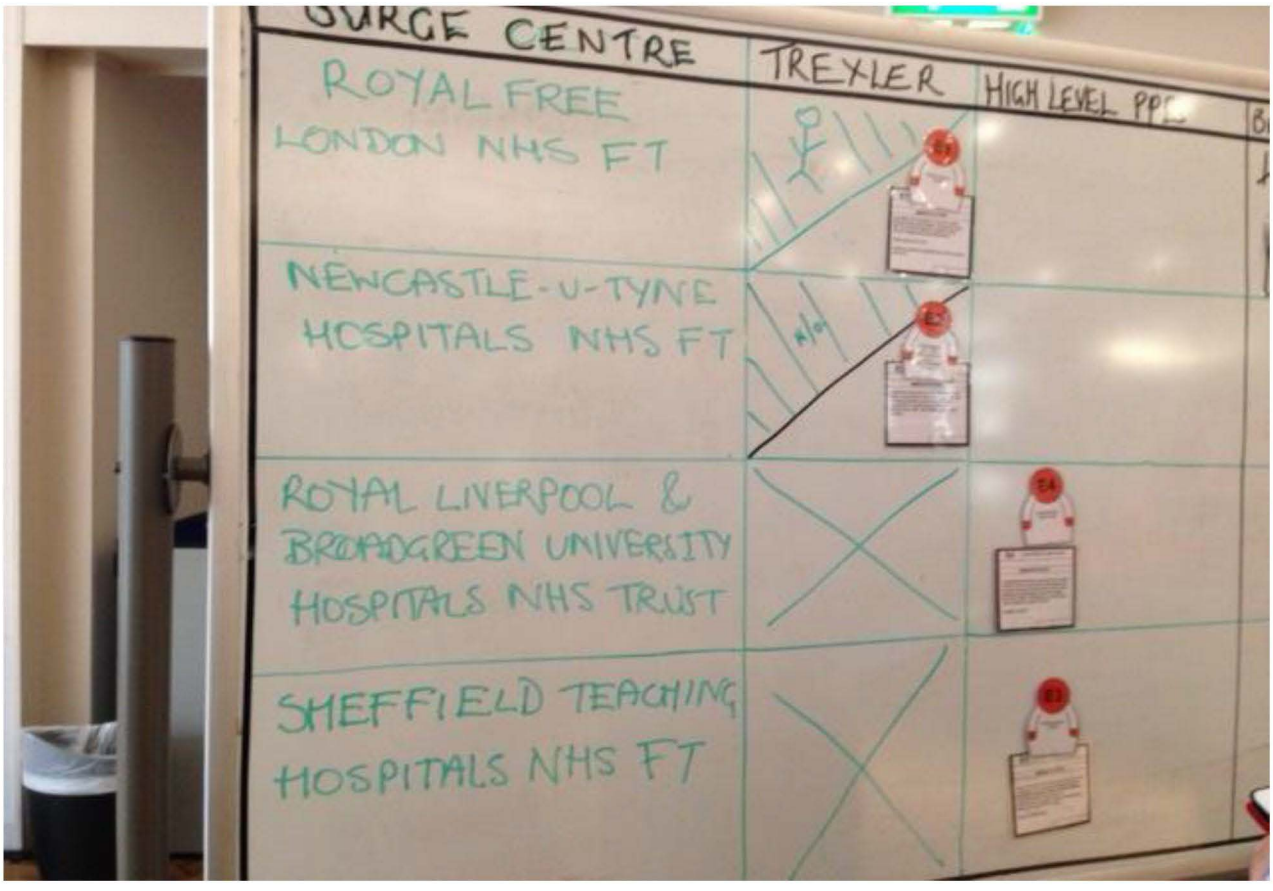
[1] Emergo Train is a proprietary trademark owned by the County Council of Östergötland/Centre for Teaching & Research in Disaster Medicine and Traumatology and cannot be used by individuals or entities for their goods and services without prior written approval by the Centre for Teaching & Research in Disaster Medicine and Traumatology. http://www.emergotrain.com/ ETS Copyright © 2007 by the Centre for Teaching and Research in Disaster Medicine and Traumatology, Linköping, Sweden All rights reserved.

Figure 1: Allocation of EVD cases to the surge centres



4.3 Participants

Participants in the exercise included representation from Public Health England, NHS England, the North East Ambulance Service, Yorkshire Ambulance Service, North West Ambulance Service, London Ambulance Service, Royal Free Hospital London NHS Foundation Trust; the Newcastle upon Tyne Hospitals NHS Foundation Trust; the Royal Liverpool and Broadgreen University Hospitals NHS Trust; and the Sheffield Teaching Hospitals NHS Foundation Trust, Imperial College Healthcare NHS Trust, as well as Communications officers and Directors of Public Health.

Subject Matter Experts comprised representation from the Department of Health, the Ministry of Defence, the Department for Communities and Local Government, Public Health Wales, NHS England, Public Health England, the Health & Safety Executive and the National Ambulance Resilience Unit.

A full list of participants and organisations is shown at Appendix C.

4.4 Exercise Planning

A planning team for the surge capacity exercise was established from PHE's Emergency Response Department and NHS England.

5. Exercise evaluation and outcomes

Exercises help provide experience and practice to those who may be involved in response. They also provide an opportunity to share knowledge, identify and correct knowledge gaps and inconsistencies. An important tool for improving preparedness and planning is the evaluation of events and exercises, not only in identifying areas for improvement, but also identifying areas that are working well.

The scenarios were designed to test existing arrangements and to draw out some of the challenges and pressures to be faced in the event of multiple confirmed cases of Ebola in England and the need for robust surge capacity arrangements. The evaluation of the exercise was based on the assessment and observations of the participants and on discussions and feedback collated during the plenary sessions.

Participants were given the opportunity to develop actions to address areas for improvement for their own organisations. Observations on strengths and opportunities for improvement as well as issues relating to interdependencies with cross-government working have been identified and included in this report. These will be shared across Health and with Other Government Departments.

All participants worked together to tackle the issues raised by the scenarios and feedback from participants confirmed they felt the exercise was a good experience and of great benefit. Analysis of participant feedback on the exercise is included at Appendix D.

The exercise highlighted a number of issues, in terms of strengths and good practice as well as areas where gaps were identified and further work is needed. Feedback from participants in plenary sessions acknowledged the many legacy issues that must be taken forward from the support to the Ebola response. It was also stated that the value from the learning must not be lost and may have a broader applicability for future practice and response.

5.1 Observations on Strengths and Opportunities for Improvement

5.1.1 Preparation, notification and alerting

Observations on Strengths

Feedback during plenary sessions confirmed participants' confidence in their preparation, notification and alerting procedures which have been well tested in relation to other disease outbreaks as well as during the more recent Ebola-focussed exercises. On call systems and rotas are in place and tested, and there are well established pathways for alerting and notification across all relevant stakeholders. Trained staff are available and have benefitted from the many exercises that have taken place at the local, regional and national levels. Volunteers and specialists from Intensive Therapy Units (ITUs) and Paediatrics have received training as well as staff from NHS Scotland. There is resilience in the system but this is an ongoing process and the provision of ongoing training and exercising must be supported.

In the case of an Ebola positive patient, the need for a minimum of a six-hour set up time required to receive the patient was highlighted and also the need to have early discussions with the trust pharmacy regarding availability of specific therapeutic treatment. Both NHS and PHE participants were confident that mechanisms, processes and systems are in place and these have been tested along with the provision of good internal and external communications. The Royal Free Hospital, London are experienced in the management of media interest in Ebola patients and also in the provision of both internal and external messages and liaison with relevant stakeholders, and they have agreed to share this knowledge and experience with the other surge centre trusts.

Critical care plans are in place to aid the ability to move in-patients and to absorb the impact of the admission of a confirmed Ebola case. A great deal of work has also been done to review, assess and improve extant processes and systems. In particular there has been much focus on improving donning and doffing procedures for Personal Protective Equipment (PPE). The Royal Free Hospital, London confirmed that new PPE suits have now been developed for use in a buddy system to improve staff safety.

Observations on Opportunities for improvement

In general, although it was felt that alerting and notification arrangements are well-established and tested, it was suggested that the resource available for Directors of Public Health on call arrangements particularly during an extended period, needs further consideration to ensure resilience of response.

Recommendation 1:
Directors of Public Health should review on call rotas, including splitting full weeks, to ensure staff resilience

Training and exercising is an important component of preparedness measures. It was generally acknowledged that the motivation for and provision of ongoing training and exercising is paramount. It was agreed that this legacy issue from the Ebola response should therefore be endorsed by trust Chief Executives and supported by NHS England in order to support and improve capability by making staff available for training. Wider training with other supporting trusts (including NHS Scotland) is ongoing and should also be supported. In particular, this should include PPE training, Paediatric Intensive Care Unit (PICU) nursing and paediatric and adult intensivist training in order to increase numbers of staff available above normal surge capacity and to improve resilience. Further cross-training with the MoD regarding patient transfer should also be considered. It was suggested that the surge centre trusts might also benefit from employing a clinical educator for infectious diseases.

Recommendation 2:
Ongoing investment in training and exercising should continue in order to improve resilience and to build on the learning gained from the Ebola response

There was some discussion around how to achieve a measurable way of identifying standards as well as the quality of training delivered across the system. This includes health and safety issues; donning and doffing; cross-training and availability and use of staff from other surge centres so that if the case arises, staff can be deployed from one surge centre to support another. It was agreed that there is a need to set and train to national standards to improve resources and resilience and this should link into commissioning. The mechanism for being able to offer and deploy staff from one centre to another also needs further consideration.

Recommendation 3:
A national standard for training staff in infectious disease treatment and management needs to be identified and this should to link into commissioning.

Recommendation 4:
To consider a mechanism to enable trained staff to be deployed from one surge centre to another

It was also suggested that the development of an Infectious Diseases Network (similar to the existing Trauma Networks) now needs to be developed to support the sharing of common standards and practices and this also should be supported by future training plans. There is currently no system in place for the exchange of clinical knowledge.

Recommendation 5:
The ID Clinical Reference Group should consider the proposal for the development and establishment of an Infectious Diseases Network to support the sharing of common standards and practices, and this should be supported by future training plans

All participants commented on the wealth of tests, exercises, improved guidance and protocols that have been put in place. However, there is currently no mechanism for sharing the clinical and non-clinical learning and experience from all the tests, exercises and live cases that have happened. It is very important that the value of these activities is not lost and is made available through an online forum or similar, and a strategy should be put in to place to ensure that work/training is maintained and regularly updated and exercised.

Recommendation 6:
A mechanism and system should be put in place for sharing the learning and experience from all the testing, exercises and live cases during the Ebola response. This information should be made available via an online forum or similar and through regular training and exercising

Feedback from participants also highlighted that the trained and skilled Health Care Workers now returning from West Africa could be identified as additional resource to the centres but there needs to be a process of bringing them into the system. It was agreed that this would be an important step for legacy and resilience purposes and further work is required here as well as discussions with UKMed / DFID.

Recommendation 7:
To consider how returning Health Care Workers can be brought into the system as additional resource to the surge centres

Participants noted in feedback that the potential impact on hospital resources and staffing required for escalation, as well as on overall surge centre capacity arrangements, and the ability to draw down additional resource should be identified as early as possible. In case of tertiary referrals (e.g. ID, HIV, rheumatology), there should be an informal cessation of these services and clearer contingency to manage these.

Recommendation 8:
Early identification of the impact on resources, staffing and surge capacity arrangements would be of benefit, including identification of services and surgeries that can be postponed/cancelled

5.1.2 Clinical capabilities, protocols and resources

Observations on Strengths

At the start of each discussion session, clinicians, nurses and specialists were invited by the Lead Facilitator, acting as “the Bed Bureau”, to the whiteboard to allocate the EVD cases. At the start of Session 1, participants were informed that one Trexler unit at the Royal Free Hospital, London, was already occupied by a patient (Case X). After detailed

discussion with the Bed Bureau, cases were allocated as indicated in the table below. PHE considerations included contact tracing and monitoring of close contacts.

Session 1:

Surge Centre	Trexler Unit	High Level PPE	ID Beds closed	PHE Considerations
Royal Free Hospital, London	Case X Case E1		10 22 [Case E5]	Travelling companion to E1
RVI, Newcastle	E2		18	Wife/son and dog
Liverpool		E4	13	Wife(pregnant) / son
Sheffield		E3	17	Partner/daughter

Session 2:

Surge Centre	Trexler Unit	High Level PPE	ID Beds closed	PHE Considerations
Royal Free Hospital, London	Case E1		10 E5	Travelling companion Case E6 remains in London for monitoring Momulu family - monitoring
RVI, Newcastle	E2	E7 & E8	18 +	Wife/son and dog
Liverpool		E4	13	Wife(pregnant) / son
Sheffield		E3	17	Partner/daughter

Each surge centre trust therefore had at least one Ebola patient to manage and treat. The significant impact of treating this patient on the availability of other infectious disease (ID) beds, staffing and the rest of hospital was identified. Surge capacity arrangements would include early identification of alternative ID in-patient beds to close and the reallocation of staff to support the required response. The wider impact on the local health economy was also considered and measures for contingency should be further discussed.

However, the trusts confirmed that a clear set of Action Cards for managing patients was available and that stocks of PPE for five days was expected. NHS England confirmed that the supply of PPE suits is now robust.

Although participants were confident they could absorb the impact of having an Ebola patient in their trust, the significant impact on staff and the trust was acknowledged. For example, if the Royal Victoria Infirmary (RVI), which is part of the Newcastle-upon-Tyne NHS Foundation Trust, were to treat three patients, this would require up to 70 staff to support their care and would result in over 18 infectious disease beds being closed. The RVI confirmed they would liaise with NHS Scotland to call upon trained staff there in order to provide additional resilience and to support staff safety and wellbeing issues. However, it was also noted that the system has never been tested for treating three

concurrent patients and plans may need further consideration to support the impact of additional bed closures. The financial impact on the trust has also been assessed and the loss of additional beds would indeed impact on the trust.

Since the start of the Ebola response, regular teleconferences have been established between the four surge centres with NHS England. It was agreed that these have been very beneficial in sharing knowledge and building and consolidating good working relationships.

It was confirmed in the feedback sessions, that logistics and waste management processes are place and have been tested; and patient transfer has been exercised and tested with both NARU and with the MoD. At the RVI, a stretcher isolator is available on site for use in patient movement as required and an exercise has already been undertaken with the MoD.

There was discussion around the challenge of transferring the patients to the RVI, Newcastle but NHS England confirmed there is a nationally agreed process for this.

Although a lot of work and testing has been undertaken to ensure the capabilities of logistics and PPE suppliers, as well as the arrangements for the management of clinical waste, there was discussion around waste management capacity which would be limited in the case of two or more patients. There was also discussion around the issues of container size (30L or 60L) to be used in the transportation of Category A waste. Derogation of powers from the Department of Transport to the Trusts regarding packaging and the use of 60L containers to manage waste was confirmed.

Observations on Opportunities for Improvement

Due to the experience gained by staff at the Royal Free London NHS Foundation Trust in treating and managing positive Ebola cases, the Trust has become the unofficial Bed Bureau. In a situation of multiple positive cases, patients would need to be allocated to other surge centres and the decision-making process should be formalised for purposes of clarity.

Recommendation 9:
DH and NHS England to consider formalising the process of patient allocation to surge centres with the Royal Free Hospital, London, acting as Bed Bureau

Participants discussed what potential factors might influence the allocation of a patient. NHS England confirmed that the availability of a Trexler unit would be the preferred mode of treatment and would take primacy in the decision-making process. Geography and its impact on transfer time might also affect clinical decision-making.

There was detailed discussion around the management of a child in the system and acknowledgement that there is currently a limit in paediatric capacity. There was also discussion over whether a child should be placed in a Trexler unit given the complex issues around the safety of staff when undertaking clinical interventions, as well as the safety and wellbeing of the child. It was acknowledged that there are some very real and challenging clinical issues that need to be taken forward. Further discussion is required regarding what investment is required to respond to potential future infections. The overall provision for managing children with serious infectious diseases needs to be addressed to meet the challenge of getting up to standard.

Recommendation 10:
Further work is required between ID and paediatric consultants and nurses to improve clinical capability and to raise current standards

The ability and capacity for in-hospital ID patients to be exported at short notice from the ID ward to make staff capacity available for a Viral Haemorrhagic Fever (VHF) admission needs further consideration. Some ID patients may be difficult to move (e.g. Multi Drug Resistant Tuberculosis) and some form of contingency measure needs to be identified. It was not known if there is a plan in place to support large numbers of beds being closed.

Recommendation 11:
Surge centre trusts to identify and consider the issues regarding movement of in-hospital ID patients to create capacity for VHF admission, and to develop a protocol to address these issues

Two of the participating surge centre trusts acknowledged they have not yet managed a VHF case so it would be important that they are able to take clinical advice from those surge centres with more experience. The treatment of multiple, concurrent cases has also not yet been put into practice and the impact on staffing escalation and on other hospital activities should not be underestimated. In the exercise, it was estimated that if the suspected case (Case E5 - a needlestick injury) developed into a positive case, thereby becoming the third concurrent case at the Royal Free Hospital, London, it would result in the closure of 65 beds which would potentially impact on other patients, services and the rest of the hospital, as well as on the wider local health economy.

It was also noted that treating more than one patient concurrently could have potential issues for staff safety. Further consideration is therefore required regarding what needs to be done to enable the NHS to respond to the challenge of treating concurrent patients (e.g. in the exercise there was a total of seven cases) and the issues this would raise for the NHS (e.g. cancellations of elective surgery). The development of a forward staffing model to ensure resource is available to the trust when required would be of benefit.

Recommendation 12:
NHS England to develop a forward staffing model to support the surge centres

The impact of multiple, positive EVD cases along with the impact of additional possible cases becoming positive was stressed. At some point, it would not be sustainable for the surge centre trusts to continue to treat increasing numbers of EVD cases alongside its obligation to provide care to other patients and services, and an alternative solution needs to be proposed. NHS England confirmed that there is a mandate to support the development of a cohort model but a substantial amount of work still needs to be done on this issue and shared with the surge centres.

Recommendation 13:
Clarity on the role and structure of the cohort model, including triggers, should be shared with the surge centres

The last Ebola patient treated at the Royal Free Hospital, London was in hospital for 25 days and even after being discharged, remained under NHS care for some time. A process for bringing services back into use once a patient has been discharged is required.

Recommendation 14:
Trusts to develop a protocol for bringing services back into use once a patient has been discharged

Since the start of the current Ebola response, the practice of sharing information by regular teleconferences has been established between the four surge centres, and this has been very beneficial. It is recommended that these teleconferences should continue for the duration of the response in order to maintain the ability to exchange information and to encourage joined up, effective working practices and relationships.

Recommendation15:
To maintain regular teleconferences between NHS England and the four surge centres until the current response ends

In Session 1, each surge centre was allocated at least one patient for treatment. It was acknowledged that this would have a significant impact on staff resources and more trained staff are required. Trusts also need to ensure the ongoing availability of logistics and capabilities for supplies and resources, especially PPE, during a prolonged period of treatment.

In Session 2, it was agreed, in the context of the exercise, that the mother and child would be best treated together at the RVI. However, if the mother and/or child deteriorated, they would be separated and two PPE rooms would be required to treat

them with additional staff required. The potential for staff safety issues must not be overlooked and the availability of trained staff remains a major issue as well as the capacity to manage a paediatric case.

Recommendation 16:
Further investment in training is required to increase paediatric capability and capacity

Although patient transfer has already been exercised and tested, clarity on decisions around patient transfer and transport options is required. In particular, the transportation of paediatric cases needs further consideration.

Recommendation 17:
Ambulance Service to develop an Action plan / protocol in partnership with NARU and MoD for the transportation of paediatric cases

5.1.3 National outbreak control and command, control and coordination processes

Observations on Strengths

PHE has developed and shared guidance and protocols for port screening, contact tracing and monitoring of individuals who have returned from West Africa. This information can be accessed via the Ebola Virus Disease Gov.uk website (https://www.gov.uk/government/collections/ebola-virus-disease-clinical-management-and-guidance).

With multiple positive cases of VHF, the challenge of managing contact tracing was discussed and the resource required to do this might be significant. In the exercise's second scenario, consideration was given to the monitoring of the father (who tested negative for Ebola) and for the other members of the family who had all had contact with the positive cases. It was agreed that the relationship and cooperation between PHE with the Local Authority needs further development. The Royal Free Hospital London NHS Foundation Trust confirmed they have developed a checklist of what is required for a suitable location to monitor a high risk person/family member. This checklist will be shared with the other surge centres.

There has been a great deal of work undertaken across the country to develop how regional command and control will work, but it was noted that this may differ across the different regions and across organisations. During the exercise, local plans were referred to and there was confidence in the use of alerting and communications protocols and channels. Action cards and arrangements are in place with stakeholders and these have been successfully exercised and tested along with cascade calls and protocols for escalation. Fortnightly teleconferences are held with Local Resilience Forums and monthly Health teleconferences have been put in place. Protocols are in place for the

setting up and management of Strategic Coordinating Groups, Scientific and Technical Advice Cells and Communications cells.

Observations on Opportunities for Improvement

Feedback from the plenary sessions demonstrated that issues around the deployment of trained staff from one surge centre to another; the ability to re-direct non surge activities; and the ability to access and use trained returning Health Care Workers do have some correlation with other ongoing workstreams, and it was recommended that the DH and NHS England should work with the NHS to provide generic solutions to generic problems, including the development of an infectious diseases outbreak plan. It is important that the NHS in England is prepared for response to Ebola, but the NHS also needs to be able to continue with usual business as well. It was clear from plenary feedback that all teams were trying to address issues, but this effort should be supported at the national level so that the centres are not working independently of each other and duplicating effort. It was also noted that solutions proposed to resolve these issues may potentially have a wider impact and legacy on the management of and response to future infectious disease outbreaks.

Recommendation 18:
DH, NHS England and PHE to discuss and develop an ID outbreak plan, to include and take forward the learning from this Ebola response

During Session 2, there was some confusion and discussion around the management of Case E9 (deceased infant). Although PHE would provide advice around the risk assessment of handling the body, it would be the responsibility of the Coroner's Office to remove the body to a specialised mortuary/undertaker. It was agreed that further exercising regarding the management of the deceased is required.

Recommendation 19:
Based on current guidance regarding the handling and management of Hazard Group 4 pathogens and similar human infectious diseases of high consequence, further exercising is required regarding the management of the deceased, to include LA, Ambulance Service and PHE

5.1.4 Surge capacity arrangements for managing multiple positive EVD cases

Observations on Strengths

Generic surge capacity plans are in in place and it was felt that there is resilience in the system to support arrangements for managing multiple positive EVD cases. However, current surge capacity plans are generic and are not Ebola specific. These may also be tailored to suit local geography and demographics and the step-up and impact on the local health economy therefore differs across England. This could also impact on decision-making regarding the allocation of patients.

Observations on Areas for Improvement

As already mentioned, the management and treatment of multiple EVD cases would have very significant resource and logistics implications, especially around the step-up of the NHS supply chain. The decontamination and replacement of a Trexler envelope takes up to four days before it can be brought back into use and there are significant volume and capacity issues around bulk waste management.

With regard to moving a critically ill child from one surge centre to another, further work is required to assess the most appropriate means of transport and consideration around whether a paediatric ID clinician should accompany the patient. A clinical risk assessment would need to be put in place on each individual case.

Recommendation 20:
Further discussion is required between DH and the MoD/RAF regarding paediatric transfer arrangements

It was noted in feedback that a significant amount of work has been undertaken by PHE regarding the monitoring of potential cases/exposures and there are procedures in place for this. In the second scenario, there was the potential for a greater number of children to have been exposed at a family gathering. This scenario would require the instigation of staff training in anticipation of further positive paediatric cases. At the same time, participants were mindful that any additional training should be proportionate to the response required.

Recommendation 21:
Future training requirements should be consolidated and be consistent across England and be proportionate to the response required

5.1.5 Interdependencies between Health and Other Government Departments

Observation on Strengths

Reference was made during the exercise to other national level exercises that have already successfully taken place, including with the Devolved Administrations. It was also stressed that in the case of positive EVD cases, the level of ministerial interest cannot be underestimated, especially around decision-making. This can have a very disruptive impact on those involved in response and the agreed routes of communication should be adhered to. If there were multiple positive cases of EVD in England, COBR would undoubtedly be requesting information at the national level and this would be across government departments. Caldicott information governance requirements must remain in place and the NHS must continue to comply with these principles and the protection of patient confidentiality.

Observations on Areas for Improvement

In the second scenario, participants were faced with an unreported death in the community within a family who had recently returned from Sierra Leone.

There was significant discussion between all partners around who would lead at the local level and the requirement for a Strategic Coordinating Group to be established. While this is a Health led incident, there would be liaison and sharing of information with relevant partner agencies (including at the LRF level). However, Health has different reporting lines up through DH as opposed to Local Authorities who report up through DCLG. It was stated in feedback discussion that a situation of multiple EVD cases would have wider consequence (including the requirements from COBR) and clarification is therefore required on how relationships work between partner organisations and government departments.

Recommendation 22:
Clarification is required regarding reporting requirements and information sharing across partner organisations and government departments

5.1.6 Coordination of public messaging associated with multiple positive EVD cases

Observations on Strengths

The purpose of the DH UK Ebola Communications Plan is to aid the coordinated response by Communications officers at the national level and to inform all actions to be taken. This is a very extensive plan and includes templates for pre-formatted messages. Some local and regional flexibility may need to be incorporated into the Plan to ensure local communications issues are also covered. Communications teams should also work together to assist with the development of a generic Infectious Diseases Plan.

Recommendation 23:
NHS England, PHE and DH national Communications teams to liaise and share the UK Ebola Communications Plan and assist with the development of a generic Infectious Diseases Plan

At the pre-diagnosis stage, the national communications teams confirmed they would work to the UK Ebola Communications Plan, linking in with the Civil Contingencies Secretariat (CCS), DH, PHE, NHS England, Ambulance Services, Devolved Administrations and the surge centres. It was confirmed that they would remain reactive at this stage but be prepared to be proactive should information be leaked to the public domain. After diagnosis, a national communications cell would continue but a local communications cell would also be established.

Standard protocols are in place for media announcements and spokespersons have been pre-identified across DH, NHS England and PHE. The UK Ebola Communications

Plan includes an Ebola communications toolkit which is ready for activation and use by a wide variety of stakeholders. Public health messages of assurance and the activation of a Helpline to support the worried well would also be included in this toolkit, as well as advice to the families concerned on how to manage social media. The surge trusts Communications teams are all familiar with the Plan but it was agreed that they would benefit from further practising and testing.

Regular teleconferences are in place to encourage joined-up working relationships and coordination of messaging.

Observations on Opportunities for Improvement

Due to the role played by The Royal Free Hospital London NHS Foundation Trust in the treatment of actual Ebola cases, the Communications team there has experience of dealing with both the media and concerned family and this key learning should be shared with the other surge centre Trusts.

Recommendation 24:
The Royal Free Hospital London NHS Foundation Trust to share key learning on communications issues

In Session 2, Communications teams were faced with the situation of a family who had recently returned from West Africa. The 8-month old infant died at home and the mother and 6-year old son were transferred to the RVI, Newcastle. However, it was recommended that the father remained in London for monitoring along with other members of the family who had had close contact with the cases.

It was suggested in feedback that more guidance for liaison with families is required, in particular when the family is not co-located in the same city as the patient. The Royal Free Hospital, London has worked with NHS England to support relatives but it was acknowledged that more work is required here.

Recommendation 25:
DH, PHE and NHS England Communications to develop guidance for surge centre local Communications liaison with families

It was agreed that in a rapidly evolving situation or where there are added levels of complexity, such as dealing with a paediatric case, although some pre-formatted messages are available the development of specific messaging on paediatric cases as well as on the challenges around capacity and patient death are required. Broad guidance would be provided on how to deal with families and how the relatives/families should deal with social media issues, but this would benefit from further consideration and review.

Recommendation 26:
NHS England Communications to develop pre-prepared messaging on paediatric cases; on challenges around capacity; and patient death

Recommendation 27:
NHS England Communications to develop guidance on how families should deal with social media

The issue of the dwindling size of trust communications teams was raised and the pressure these teams would be under would be significant. Capacity and resourcing for Communications personnel may well be an issue in a prolonged period of response, particularly in the North where the Communications officer would be covering three surge centres.

Recommendation 28:
NHS England and surge centre trusts to consider the resource and allocation of communications personnel, including the development of a pool of trained staff to help build resilience

In the second session, there was some misunderstanding regarding who would manage the information flow, particularly concerning cases in a local community setting. It was agreed that getting messages and communications out to the community would present a significant challenge. The family in scenario two had returned to London from a recent trip to Sierra Leone, so it would be important for the Communications teams to engage with the local Sierra Leone community in London and, if necessary, with the High Commission in Sierra Leone.

Recommendation 29:
PHE to consider how to raise awareness of available messages for the local community

Communications teams acknowledged that the bulk of experience is held by the Royal Free Hospital, London and that it is important that the experience and lessons learned should be shared more widely. This will also have a legacy value and benefit in the response to future infectious disease outbreaks. It is very important that PHE and NHS England Communications engage with the surge centres regarding sign-off of messages to ensure the coordination of public messaging.

Recommendation 30:
DH to consider clarification and sharing with the surge centres of the protocol regarding sign-off of messages

6. Conclusions

- All the participants in this exercise considered that the event was extremely useful in assessing current arrangements in place in the NHS and in PHE for the response to multiple confirmed cases of Ebola in England. It was widely acknowledged that the exercise enabled participants to gain a shared understanding of PHE and NHS capabilities and surge capacity arrangements, including national command, control, communication and coordination processes.

- The ability of the four surge centres designated to provide capacity and resources to treat multiple EVD cases in England depends on effective, joined-up strong working relationships. This should be supported by a mechanism for the sharing of learning and expertise; commissioning of services; and a review of capacity and capability especially around adult and paediatric requirements.

- The surge centres would benefit from the development of an Infectious Disease Network to support capability and capacity and the development of a national standard for quality and training would ensure common standards of practice.

- As part of the legacy from the Ebola response, a generic infectious diseases plan should be developed, to include a generic infectious diseases communications plan.

- It is important to use the opportunity afforded by the exercise and build on the learning gained from the response to Ebola. This learning and experience needs to be coordinated at the national level for wider sharing across the country.

- In addition, a comprehensive assessment of the resources and capabilities available, including paediatric management, is required along with an analysis of how these capabilities fit with national strategy and policy direction.

- The exercise demonstrated good understanding of roles and responsibilities as well as processes and systems currently in place. Many areas of strength and good practice were identified as well as gaps and issues for further consideration. Further clarity is required regarding how DH, PHE and NHS England work together and with Other Government Departments.

There are many legacy issues from the Ebola response that now need to be taken forward. Many of these may also have a broader applicability and impact on the response management of future infectious disease outbreaks. The NHS in England needs to be prepared for this response and at the same time needs to be able to continue with the usual day to day business.

Appendix A: Summary of recommendations

Serial	Surge Capacity Exercise - Recommendations	Responsibility
	Preparation, notification and alerting	
1	Directors of Public Health should review on call rotas, including splitting full weeks, to ensure staff resilience	Directors of Public Health
2	Ongoing investment in training and exercising should continue in order to improve resilience and to build on the learning gained from the Ebola response	All organisations
3	A national standard for training staff in infectious disease treatment and management needs to be identified and this should to link to commissioning.	DH / PHE / NHS England
4	To consider a mechanism to enable trained staff to be deployed from one surge centre to another	NHS England
5	The ID Clinical Reference Group should consider the proposal for the development and establishment of an Infectious Diseases Network to support the sharing of common standards and practices, and this should be supported by future training plans	NHS England
6	A mechanism and system should be put in place for sharing the learning and experience from all the testing, exercises and live cases during the Ebola response. This information should be made available via an online forum or similar and through regular training and exercising	DH / Cabinet Office
7	To consider how returning Health Care Workers can be brought into the system as additional resource to the surge centres	DH / NHS England / DFID
8	Early identification of the impact on resources, staffing and surge capacity arrangements would be of benefit, including the identification of services and surgeries that can be postponed/cancelled	Trusts / NHS England
	Clinical capabilities, protocols and resources	
9	DH/NHS England to consider formalising the process of patient allocation to surge centres by the Royal Free Hospital, London, acting as Bed Bureau	DH / NHS England / Royal Free Hospital
10	Further work is required between ID and paediatric consultants and nurses to improve clinical capability and to raise current standards	DH / NHS England / Trusts
11	Surge centre trusts to identify and consider the issues regarding movement of in-hospital ID patients to create capacity for VHF admission, and to develop a protocol to address these issues	NHS England / Trusts
12	NHS England to develop a forward staffing model to support the surge centres	NHS England / Trusts
13	Clarity on the role and structure of the cohort model, including triggers, should be shared with the surge centres	DH / HSE / NHS England / PHE
14	Trusts to develop a protocol for bringing services back into use once a patient has been discharged	Trusts

15	To maintain regular teleconferences between NHS England and the four surge centres until the current response ends	NHS England / Trusts
16	Further investment in training is required to increase paediatric capability and capacity	DH / NHS England
17	Ambulance Service to develop an Action plan / protocol in partnership with NARU and MoD for the transportation of paediatric cases	NARU / MoD / Ambulance Service
National outbreak control and command, control and coordination processes		
18	DH, NHS England and PHE to discuss and develop an ID outbreak plan, to include and take forward the learning from this Ebola response	DH / NHS England / PHE
19	Based on current guidance regarding the handling and management of Hazard Group 4 pathogens and similar human infectious diseases of high consequence, further exercising is required regarding the management of the deceased, to include LA, Ambulance Service and PHE	PHE / LA / AS
Surge capacity arrangements for managing multiple positive EVD cases		
20	Further discussion is required between DH and the MoD/RAF regarding paediatric transfer arrangements	DH / MoD
21	Future training requirements should be consolidated and be consistent across England and be proportionate to the response required	DH / NHS England / PHE
Interdependencies between Health and Other Government Departments		
22	Clarification is required regarding reporting requirements and information sharing across partner organisations and government departments	DH
Coordination of public messaging associated with multiple positive EVD cases		
23	NHS England, PHE and DH national Communications teams to liaise and share the UK Ebola Communications Plan and to feed into the development of a generic Infectious Diseases Plan	DH / NHS England / PHE
24	The Royal Free Hospital London NHS Foundation Trust to share key learning on communications issues	Trust
25	DH, PHE and NHS England Communications to develop guidance for surge centre local Communications liaison with families	DH / NHS England / PHE / Trusts
26	DH, NHS England and PHE Communications to develop prepared messaging on paediatric cases; on challenges around capacity; and patient death	DH / NHS England / PHE / Trusts
27	DH, NHS England and PHE Communications to develop guidance for the surge centre trusts on how families should deal with social media	DH / NHS England / PHE / Trusts

28	DH, PHE, NHS England and surge centre trusts to consider the resource and allocation of communications personnel, including the development of a pool of trained staff to help build resilience	DH / NHS England / PHE
29	PHE to consider how to raise awareness of available messages for the local community	PHE
30	DH to consider clarification and sharing with the surge centres of the protocol for sign-off of messages	DH

Appendix B – Programme of the day

EBOLA PREPAREDNESS: SURGE CAPACITY EXERCISE
Tuesday 10 March 2015
Central Hall Westminster

TIME	SESSIONS	PRESENTER
From 09:30	**Registration & welcome refreshments**	
11.00	**Welcome** **Aim of the exercise: To confirm a shared understanding of NHS and PHE capabilities and resources to manage multiple confirmed Ebola cases within England**	Gina Radford, DCMO **Name Redacted**, Exercise Manager
11.10	**SME Updates** **Feedback and Lessons Identified from current response arrangements**	Field Epidemiology Service Imported Fever Service NARU Royal Free Hospital
11:50	**Session 1:** (45 mins) **Introduction of Scenario 1 : Returnees from West Africa** Participants work in groups to discuss the issues/risks/challenges raised by the scenario	Participants work in groups
12.30	**Facilitated plenary feedback** (30 mins) Groups present feedback as directed by the exercise facilitators	Mike Jacobs, Lead Facilitator
13.00	**Lunch**	
13.45	**Session 2:** (45 mins) **Introduction of Scenario 2: Unreported case in the community** Participants work in groupings to discuss the issues/risks/challenges raised by the scenario	Participants work in groups
14.30	**Facilitated plenary feedback** (30 mins) Groups present feedback	Mike Jacobs, Lead Facilitator
15.00	**Tea/Coffee**	
15.30	**Final session – action planning** Groups identify potential solutions and actions required to address outstanding work, gaps or areas for development	Participants work in groups
16.00	**Facilitated plenary feedback on final session and summary**	Mike Jacobs, Lead Facilitator
16.30	**Next steps and closing address**	**NR** PHE John Simpson, PHE Stephen Groves, NHS England

Appendix C – List of participants

Final attendance list

Royal Free London NHS Foundation Trust	
Andy Wapling	andy.wapling@nhs.net
Breda Athen	breda.athan@nhs.net
Dave Thomas	dave.thomas@nhs.net
Name Redacted	@phe.gov.uk
	@phe.gov.uk
Emma Kearney	emmakearney@nhs.net
Name Redacted	il@phe.gov.uk
Jethro Herberg	j.herberg@imperial.ac.uk
Nicki Smith	nicki.smith2@nhs.net
Ruchi Sinha	Ruchi.Sinha@imperial.nhs.uk
Simon Woodmore	simon.woodmore@lond-amb.nhs.uk
Stephen Lightbown	stephenlightbown@nhs.net
Stephen Mepham	stephen.mepham@nhs.net
Sheffield Teaching Hospitals NHS Foundation Trust	
Anna-Marie Newland	Anna-marie.newland@sth.nhs.uk
Anne Tunbridge	Anne.Tunbridge@sth.nhs.uk
Carole Mistry	Carole.mistry@sth.nhs.uk
Cathy Stuart	cathy.stuart@nmecomms.nhs.uk
David Walker	david.walker16@nhs.net
Ebere Okereke	ebere.okereke@phe.gov.uk
Jean Clohessy	Jean.clohessy@sth.nhs.uk
Jeremy Wight	Jeremy.wight@sheffield.gcsx.gov.uk
Julie Phelan	julie.phelan@sth.nhs.uk
Katherine Cartwright	Katharine.Cartwright@sth.nhs.uk
Mike Shanahan	mike.shanahan@yas.nhs.uk
Suzanna Matthew	Suzanna.Mathew@phe.gov.uk
The Royal Liverpool and Broadgreen University Hospitals NHS Trust	
Name Redacted	@phe.gov.uk
Emer Coffey	Emer.coffey@liverpool.gov.uk
Jo Richardson	jo.richardson@nhs.net
Name Redacted	y@phe.gov.uk
Libuse Ratcliffe	libuse.ratcliffe@rlbuht.nhs.uk
Name Redacted	e@phe.gov.uk
Mike Beadswoth	mike.beadsworth@rlbuht.nhs.uk
Name Redacted	et@phe.gov.uk
Sue Heyes	Susan.Heyes@rlbuht.nhs.uk
Suzanne Marshall	Suzanne.Marshall@rlbuht.nhs.uk
Tony Shryane	Tony.Shryane@nwas.nhs.uk

The Newcastle Upon Tyne Hospitals NHS Foundation Trust	
Allison Sykes	Allison.Sykes@nuth.nhs.uk
Name Redacted	he.gov.uk
	@phe.gov.uk
Matthias Schmid	matthias.schmid@nuth.nhs.uk
Phil Bain	phil.bain@nhs.net
Teresa Fenech	t.fenech@nhs.net
Val Bowman	val.bowman@nhs.net
Yannick Raimbault	Yannick.Raimbault@neas.nhs.uk
NHS England	
Ali Strowman	ali.strowman@nhs.net
Allison Hughes	alihughes@nhs.net
Christian Cooper	christian.cooper@nhs.net
Hazel Gleed	hazel.gleed@nhs.net
Kristel McDevitt	Kristel.mcdevitt@nhs.net
Paul Dickens	p.dickens@nhs.net
Stephen Groves	stephengroves@nhs.net
Subject Matter Experts	
Name Redacted	n@phe.gov.uk
	@phe.gov.uk
Chris Innes	Chris.Innes@communities.gsi.gov.uk
David Goulding	David.Goulding@Wales.GSI.Gov.UK
Emma Reed	Emma.Reed1@dh.gsi.gov.uk
Gina Radford	Gina.Radford1@dh.gsi.gov.uk
Name Redacted	@phe.gov.uk
John Stephenson	john.stephenson@wmas.nhs.uk
Name Redacted	he.gov.uk
	@phe.gov.uk
Michael Jacobs	michael.jacobs@ucl.ac.uk
Rachel Pudney	rachel.pudney575@mod.uk
Vin Poran	Vin.Poran@hse.gsi.gov.uk
Exercise Control	
Name Redacted	phe.gov.uk
	phe.gov.uk
	@phe.gov.uk
	e@phe.gov.uk
	@phe.gov.uk
	@phe.gov.uk
	he.gov.uk
Name Redacted	@phe.gov.uk
Name Redacted	@phe.gov.uk
Name Redacted	phe.gov.uk
Name Redacted	@phe.gov.uk

Participating Organisations

Department of Health

Ministry of Defence

Public Health Wales

Public Health England

NHS England

The National Ambulance Resilience Unit

London Ambulance Service

North East Ambulance Service

North West Ambulance Service

Yorkshire Ambulance Service

Newcastle upon Tyne Hospitals NHS Foundation Trust

Royal Free London NHS Foundation Trust

Liverpool and Broadgreen University Hospitals Trust

Sheffield Teaching Hospitals NHS Foundation Trust

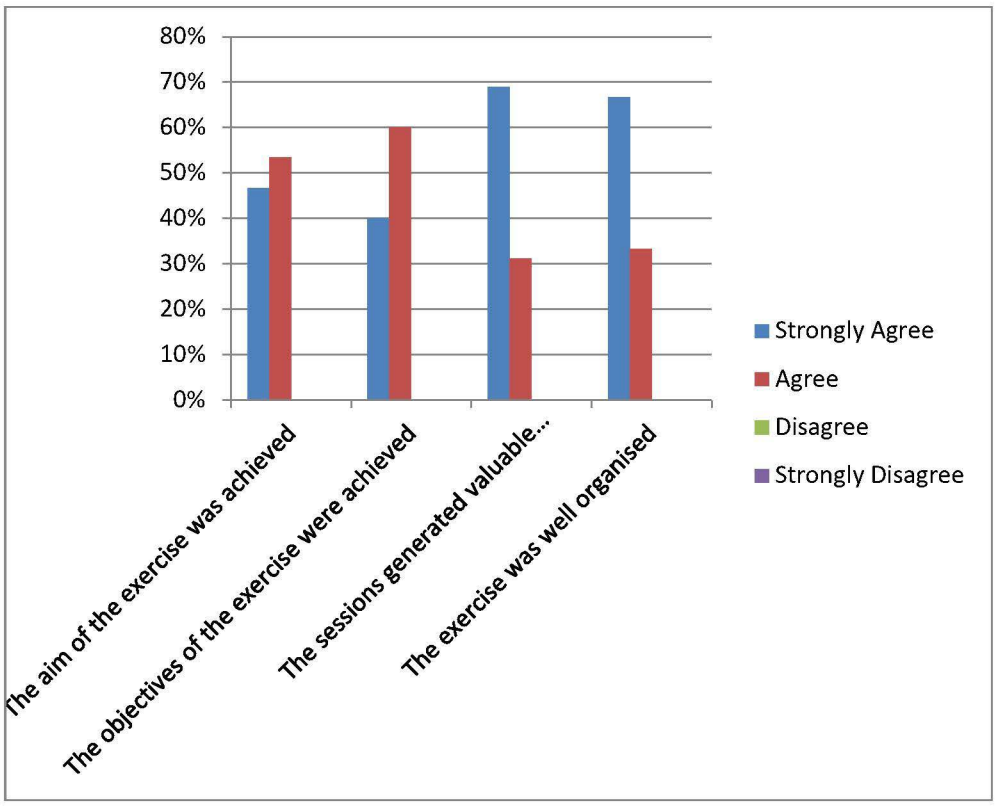
Imperial College Healthcare NHS Trust

Health & Safety Executive

Sheffield City Council

Appendix D - Participant feedback on the exercise

There were 75 attendees at the exercise. This comprised 51 participants; 13 Subject Matter Experts; and 11 members of Exercise Control. Feedback on the exercise is displayed below. 100% of responding participants strongly agreed or agreed that the aim and objectives of the exercise were achieved and that the sessions generated valuable discussion as well as highlighting areas for improvement.



	Strongly Agree	Agree	Disagree	Strongly Disagree	Did Not Answer	
The aim of the exercise was achieved	47%	53%	0%	0%	0%	100%
The objectives of the exercise were achieved	40%	60%	0%	0%	0%	100%
The sessions generated valuable discussions and highlighted important areas for development	69%	31%	0%	0%	0%	100%
The exercise was well organised	67%	33%	0%	0%	0%	100%

References

- Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence.
https://www.gov.uk/government/publications/viral-haemorrhagic-fever-algorithm-and-guidance-on-management-of-patients

- PHE Plan for Response to High Probability and Confirmed Cases Presenting in England
https://phenet.phe.gov.uk/Resources/duty-doctors/Ebola/Documents/Plan%20for%20response%20to%20high%20probability%20and%20confirmed%20Ebola%20cases.pdf

- Viral haemorrhagic fevers risk assessment (version 5: 06.11.2014)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377142/Algorithm_v5.pdf

- Health Protection Team Actions Algorithm
https://phenet.phe.gov.uk/Resources/duty-doctors/Ebola/Documents/Ebola%20HPT%20Action%20Algorithms%20v4.3.pdf

- Environmental Cleaning and Clinical Waste Disposal Guidance for Potential Ebola Contamination in Non-Healthcare Settings
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/403994/Environmental_cleaning_guidance_for_potential_Ebola_contamination.pdf

- Ebola: Returning Workers programme
https://phenet.phe.gov.uk/Resources/duty-doctors/Ebola/Pages/Returning-workers-programme.aspx

- Imported Fever Service
https://www.gov.uk/imported-fever-service-ifs

A full list of resources is available at:

https://www.gov.uk/government/collections/ebola-virus-disease-clinical-management-and-guidance

Glossary

CCS	Civil Contingencies Secretariat
COBR	Cabinet Office Briefing Room
CRIP	Common Recognised Information Picture
DCLG	Department of Communities and Local Government
DCMO	Deputy Chief Medical Officer
DPH	Director of Public Health
ED	Emergency Department
EPRR	Emergency Preparedness, Resilience and Response
ERD	Emergency Response Department
EVD	Ebola Virus Disease
FES	Field Epidemiology Service
HCW	Health Care Worker
HLIU	High Level Isolation Unit
HSIDU	High Secure Infectious Disease Unit
ID	Infectious Disease
IFS	Imported Fever Service
LSTM	Liverpool School of Tropical Medicine
NARU	National Ambulance Resilience Unit
NHS	National Health Service
NICC	National Incident Coordination Centre
OGD	Other Government Departments
PHE	Public Health England
PICU	Paediatric Intensive Care Unit
PPE	Personal Protective Equipment
RIPL	Rare and Imported Pathogens Laboratory
RVI	Royal Victoria Infirmary, Newcastle
TIDU	Tropical Infection Disease Unit
VHF	Viral Haemorrhagic Fever

Acknowledgements

Planning Team	Organisation
John Simpson	PHE Emergency Response Department
John Stephenson	National Ambulance Resilience Unit
Kristel McDevitt	NHS England
Michael Jacobs	The Royal Free London NHS Foundation Trust
Paul Dickens	NHS England
Stephen Groves	NHS England
NR	PHE Emergency Response Department

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Grateful acknowledgement is also given to Dr Michael Jacobs, Consultant & Honorary Senior Lecturer in Infectious Diseases at The Royal Free London NHS Foundation Trust for his excellent facilitation of the exercise.

The Planning Team would also like to thank Gina Radford, Deputy Chief Medical Officer, Department of Health who opened the meeting, as well as the invited speakers who provided an overview of their organisation's work during the Ebola response. The invited speakers were as follows:

- Dr Charles Beck, Consultant Epidemiologist & Honorary Senior Lecturer, Field Epidemiology Service, Public Health England
- Dr Malur Sudhanva, Honorary Consultant Virologist, Health Protection, Imported Fever Service, Public Health England
- Dr John Stephenson, Medical Director, National Ambulance Resilience Unit
- Dr Michael Jacobs, Consultant & Honorary Senior Lecturer in Infectious Diseases, The Royal Free London NHS Foundation Trust

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Emergo Train System

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This report has been compiled from the comments made by the participants during the exercise and the observations of facilitators and note takers. The report's author has tried to assimilate this information in an impartial and unbiased manner to draw out the key themes and lessons: the report is not a verbatim account of the exercise. The report is then quality checked by the senior management within PHE's Emergency Response Department before it is released to the commissioning organisation.

The recommendations made in the report are not therefore necessarily PHE's corporate position; they are evidenced on the information gathered at the exercise and interpreted in the context of ERD's experience and judgement. It is suggested that the recommendations are reviewed by the appropriate organisations to assess if any further action is required.