Public Health England

Protecting and improving the nation's health

Report: Exercise Alice Middle East Respiratory Syndrome Coronavirus (MERS-CoV) 15 February 2016

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The report on Exercise Alice: MERS-CoV

Exercise Alice was delivered on 15 February 2016, supported by the Department of Health, NHS England and Public Health England. This exercise was commissioned by Department of Health in response to concerns raised by the Chief Medical Officer about the planning and resilience to respond to a large scale outbreak of MERS-CoV in England.

The exercise was an opportunity to explore the policies, response and issues associated with an outbreak in England.

This report was prepared by Public Health England's Emergency Response Department.

Contents

Executive summary

On 15 February 2016, a table top exercise was conducted at One Great George Street, London to explore the challenges that a large scale outbreak of MERS-CoV could present nationally to health partners in England. The exercise was prompted by a request from the CMO and was focused on two stages of response; initial actions and public health response and the health care aspects of a wider spread of cases.

Participants in the exercise included representatives from NHS England, Public Health England and the Department of Health. Additionally, observers from the Cabinet Office, the Devolved Administrations and GO-Science attended.

Delegate feedback indicated that the exercise was considered to be a valuable opportunity for participants to explore the key roles and responsibilities of partner organisations in managing the response and the wider health impact beyond the initial MERS-CoV outbreak as well as providing assurance of the preparedness of health partners for an incident of this type.

There were 12 key actions from this exercise and four main discussion areas. The main actions were:

- Development of a MERS-CoV specific PPE instructional video for front line staff
- Production of an options plan for quarantine versus self-isolation
- Production of a plan for the process of community sampling during a MERS-CoV outbreak
- Development of a Communication approach to interface with NHS staff to gain engagement

There were also actions on developing arrangements to enable timely conduct of clinical trials for new or experimental treatments; guidelines for prioritising treatment when limited stocks or doses are available; procedure for MERS-CoV serology including how to scale up the process; a briefing paper on the South Korean experience and how to apply to the UK; summary of EVD lessons and the implication for MERS-CoV response management; a tool to collect live MERS-CoV contact data; good practice for definitions of MERS-CoV high risk contacts and a set of MERS-CoV FAQs

A full list of actions identified is included at Appendix A.

1. Introduction

This report describes the design, delivery and outcomes of a MERS-CoV exercise that was held on Monday 15 February 2016. The exercise was designed to explore the challenges a large scale outbreak of MERS-CoV could present to health partners and to consider the impact to the wider health community. The exercise was specifically commissioned by the CMO to explore this topic to provide an increased level of preparedness and to give an opportunity to explore and highlight good practice and identify possible gaps in the planning.

The exercise provided participants from health with an opportunity to explore a range of MERS-CoV related challenges and to discuss this in a forum with other health partners and with the CMO. This one-day table top exercise also supported the further development of MERS-CoV related planning documentation, identified actions and explored the roles and responsibilities of key partner organisations in responding to a simulated outbreak.

As of 11 March 2016, 1652 cases of MERS-CoV have been reported to WHO with at least 591 related deaths. Most cases have been reported from the Arabian Peninsula particularly the Kingdom of Saudi Arabia (KSA).

2. Aim and objectives

2.1 Aim

To confirm a shared understanding of England's health capabilities and resources to manage multiple confirmed MERS-CoV cases.

2.2 Objectives

The objectives for the exercise were:

1. To explore and confirm the health capabilities, capacities, protocols and resources, including surge arrangements.
2. To explore and confirm national command, control, communication and coordination arrangements.
3. To explore the capability for contact tracing and quarantining of possible MERS-CoV cases.
4. To explore and confirm coordination of public messaging associated with a large number of MERS-CoV cases.

3. Scenario

A group of 60 Muslims travelled to Saudi Arabia and visited Jeddah and Medina as part of Umrah. Some of the group were from London (Balham Mosque) and the

others were from the Birmingham area (Jamia Masjid Ghousia, Worcester). When they returned, all appeared fit and well. Ten days later, three of the group presented at three different hospitals with flu-like symptoms.

All the A & E departments were busy with a high prevalence of patients presenting with flu-like symptoms, however all the patients were admitted. Once the travel history was analysed, MERS-CoV was suspected and a process of contact tracing was initiated and samples were taken for testing. After two days, two of the cases were lab-confirmed with MERS-CoV and a further case at St Thomas' hospital was strongly suspected. Prior to arriving at the hospitals, two of the patients had been part of a large gathering at a local mosque in Balham.

The scenario develops with 50 lab-confirmed cases and 650 possible contacts, various elements of the NHS are under pressure from the cases and the media take a keen interest.

4. Exercise format

4.1 Exercise style

Exercise Alice was a one-day table top exercise which was delivered by Public Health England's Emergency Response Department Exercises Team at One Great George Street, London. The exercise consisted of two inject-led sessions; each session was followed by a clinical advisory group meeting then feedback in plenary. Subject Matter Experts (SMEs) from a number of supporting organisations were available to contribute and respond to any issues raised. The exercise materials also included a model of how the disease might progress; maps of the spread of cases and two pseudo media news reports to add realism. The exercise also provided an opportunity for participating organisations to conduct their own organisational assessment to analyse how their generic infectious disease and response plans linked in with overall strategy.

Participants were grouped by organisation and were supported by their respective communications personnel.

4.2 Outline of the day

The exercise was opened by the CMO, who provided background and context for the exercise as well as establishing the need for the exercise. Although the risk from MERS-CoV is considered very low for UK residents, the impact of undetected cases and any subsequent large scale spread was considered important enough to warrant exploration and allocation of resource to provide an opportunity to health partners to discuss the challenges such a scenario would present.

After a detailed exercise briefing, the day was divided into two inject-led discussion sessions, each of which included a clinical advisory group meeting with the CMO. These two sessions were followed by a third session, where the participants were given the opportunity to reflect on key issues raised in the previous sessions and consider potential solutions and actions to address these.

The scenario and injects enabled participants to consider their understanding of current procedures, roles and responsibilities and capabilities, to share information, and to highlight potential areas of vulnerability. Each group had a chairperson to lead the group's discussion through the issues raised in the injects provided, and a note taker captured the main decisions, issues and opportunities for improvement.

In the final session, the facilitator led the exercise participants through shared feedback and the learning process. The facilitator was able to prompt and guide participants to cover key areas and to probe into decisions and strategy and ask amplifying and challenging questions.

Participants were encouraged to bring any relevant plans; reference material, including extant guidance and plans, were provided to participants within the MERS-CoV core policy brief.

The outline programme of the day is included at Appendix B.

4.3 Participants

Participants in the exercise included representation from NHS England, Public Health England (PHE) and the Department of Health. Observers were invited from all three Devolved Administrations, GO-Science and the Cabinet Office.

A full list of participants and organisations is shown at Appendix C. A glossary and list of acronyms is included at Page 19.

4.4 Exercise Planning

A planning team for this exercise was established from PHE's Emergency Response Department, the Department of Health and NHS England.

5. Exercise evaluation and outcomes

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 scenario for Exercise Alice was designed to explore existing arrangements and to scrutinise the challenges presented by a large scale MERS-CoV outbreak in the UK. Specifically it aimed to explore what the options were and to assess what was already in place to manage such an incident. The evaluation of the exercise was based on the aim and objectives and was drawn from the assessment and observations of the facilitator, feedback collected during the plenary sessions and issues highlighted organisationally during the sessions. The CMO also provided a useful summation of key elements of planning that required addressing based on the exercise outcomes.

During the final session of the exercise, participants worked jointly to highlight key issues and areas for development and improvement and these were discussed in a plenary session led by the facilitator.

Throughout the day, participants worked firstly by organisation, then as a tripartite meeting with the CMO to consider how the incident would be managed and coordinated. It was recognised that the scenario, although unlikely with the high degree of surveillance that exists, would have a significant public health impact and affect other NHS services.

Feedback from participants confirmed they felt the exercise was a valuable experience and benefit. From the 32 participants who attended the exercise, 21 completed and returned participant evaluation forms (66% return). From these, 100% of responses strongly agreed or agreed that the aim of the exercise was achieved; and 100% of responses strongly agreed or agreed that the exercise generated valuable discussions and highlighted important areas for development.

Full analysis of participant feedback on the exercise is included at Appendix D.

The exercise highlighted a number of key issues, in terms of strengths and good practice as well as areas where gaps were identified and further work is needed. These are outlined in the sections below. There were four key themes in the exercise; these were personal protective equipment (PPE), use of quarantine, community sampling and communication.

5.1 Observations based on the objectives

The exercise highlighted some areas of response were the participants were in agreement. These included the command and control arrangements for a MERS-CoV outbreak, the regime of clinical treatment and infection control protocols.

5.1.1 Health capabilities, capacities, protocols and resources, including surge arrangements

There was a general consensus on the need to identify capacity and capability of assets within the health system. Assets in this context would be all resources that would be required to effectively respond to a MERS-CoV outbreak such as trained personnel, appropriate PPE in sufficient quantities and the requisite beds with suitable clinical equipment. It was considered that senior engagement to direct resources, including across boundaries was necessary for effective management.

Level and use of personal protective equipment (PPE) was central to the exercise dialogue and considered of crucial importance for front line staff. It was noted that the learning from Ebola on infection control understanding, although improved, is still not embedded with staff. Clear instruction for PPE level and use was recommended.

Access to sufficient levels of appropriate PPE was also considered and pandemic stockpiles were suggested as a means to ensure sufficient quantities were available.

Action identified 1:

The development of MERS-CoV specific instructional video on PPE level and use

There is no antiviral treatment or vaccine for MERS-CoV and only supportive treatment to help relieve symptoms can be provided.

PHE and International Severe Acute Respiratory and Emergency Infection Consortium (ISARIC) have jointly developed an evidence based publication[1] for clinicians to support their decision making for the treatment of MERS-CoV patients. This was peer-reviewed in September 2015 and is regularly reviewed to ensure evolving evidence is captured (see link 6 on page 21).

The exercise participants highlighted the desirability of exploring new or experimental therapies and treatments and considering initiating early or fast track clinical trials as a priority. It was suggested that more use could be made of sleeping contracts for supporting such timely trials.

This linked to the ethical consideration that, should an effective treatment be developed and limited treatment doses be produced, guidelines for use including prioritisation would need to be available. Ethical considerations also extended to the use and triage of existing resources such as Extracorporeal Membrane Oxygenation[2]

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[1] Link to the publication - Treatment of MERS-CoV: Information for Clinicians: Clinical decision-making support for treatment of MERS-CoV patients https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/459835/merscov_for_clinicians_sept2015.pdf

[2] Information about ECMO - http://www.leicestershospitals.nhs.uk/aboutus/departments-services/heart-services/ecmo/

(ECMO) and availability of specialist resource and staff and how these would be prioritised. ECMO was further explored including the impact of cancelling cardiology electives.

Action identified 2:

Develop a protocol to enable the arrangement and conduct of timely clinical trials for new or experimental treatments

Action identified 3:

Develop a set of guidelines to prioritise treatments when there are limited stocks/doses available

Serology was considered to be an important tool in the management of an outbreak. The group wanted to consider elements such as false positive rates and indicated that a protocol that could be used in a MERS-CoV outbreak would be a valuable resource. This linked to the availability of diagnostic tools and how these could be scaled up in an outbreak. Having national and locally agreed protocols for running assays could aid the response.

Action identified 4:

Develop a MERS-CoV serology assay procedure to include a plan for a process to scale up capacity

5.1.2 National command, control, communication and coordination arrangements

The exercise clearly identified the requirement for early command and control and the need to coordinate the response. The exercise was attended by the Devolved Administrations (DA) of Wales and Scotland and it was clear that the need to coordinate across all the DAs would be important, particularly in the event of any improvements or changes to England's approach to the response. It was noted that there would need to be early pro-active interaction between UK health officials and ministers.

The international dimension was highlighted with discussion about International Health Regulations (IHR)[3], alerting via the Early Warning Reporting System (EWRS)[4]

[3] International Health Regulations at: http://www.who.int/ihr/publications/9789241596664/en/
[4] EWRS is a confidential computer system allowing EU Member States to send alerts about events with a potential impact on the EU, share information, and coordinate their response

and working with partners such as the World Health Organization (WHO) and the European Centre of Disease Prevention and Control (ECDC).

The international coordination theme linked with learning from previous experiences and extant programmes. This included three key areas, they were:

- The extensive MERS-CoV outbreak in 2015 in the Republic of Korea (South Korea)
- Lessons from the Ebola Virus Disease (EVD) and how to apply to MERS-CoV including a checklist of key learning
- Mapping the learning from the High Consequence Infectious Diseases (HCID) programme[5]

The group had lots of questions about the outcomes from the South Korea outbreak and were keen to derive as much direct application to apply to a UK MERS-CoV outbreak situation as possible. The group wanted detail on the South Korean cases that were quarantined (approximately 17,000) and any evidence of subsequent transmission and any other pertinent detail that would inform the UK response planning including the use and execution of exit screening. This related to UK ports of entry which were discussed. The group debated what advice would be issued and what screening protocols would be recommended if the UK experienced an outbreak. The group speculated about screening visitors from the Middle East as well as returning travellers and if temperature screening was feasible. The participants did not find an answer to this and recommended that this required more exploration.

Although the lessons from EVD are still being captured, analysed and assessed, it was recognised that this was a plenteous ground for learning that would be applicable to MERS-CoV. The exercise highlighted that it was essential to capture the lessons from EVD including how to recognise the difference in levels of risk to individuals.

Action identified 5:

Produce a briefing paper on the South Korea outbreak with details on the cases and response and consider the direct application to the UK including port of entry screening

Action identified 6:

Produce an extensive summary of the EVD lessons identified with a section on applicability to MERS-CoV

[5] The aim of the HCID programme is to develop an agreed approach to managing the end to end patient pathway for known and unknown HCID.

5.1.3 Capability for contact tracing and quarantining

Many areas of capability were discussed but by far the most controversial and wide ranging were the options to restrict the movement of symptomatic, exposed and asymptomatic patients and whether this was voluntary or through the imposition of restriction. Terminology was used interchangeably, with quarantine and self-isolation the primary lexicon. It was clear that the two terms had distinct meanings for participants'. Self-isolation was understood to be voluntary and used for symptomatic individuals whereas quarantine was considered an enforced isolation[6]. However, some participants did consider this to be impractical with legal ramifications. The practical approach suggested was that people would self-isolate at home under active health surveillance and would have daily contact with Health Protection staff with an information leaflet on the disease.

The use of hotels (as per the South Korea model) or using specific locations (receiving sites with respiratory immunisation and diagnosis units (IDU)) to '*hold*' people) was also highlighted. The group observed that this may reduce the requirement to move patients. Patient movement may have to be via HART ambulances which may have limited availability. This system could concentrate patients and thus resources into one location, potentially reducing the possibility of contamination and disease spread. However, it was mentioned that this would have its own inherent issues such as the legal right to '*hold*' someone in such a location.

The use of any sort of community related isolation would require a degree of social care involvement. Such options along with triggers for activation would need to be included in the options plan. There were considered to be many sources of good practice that could be examined; these included Canada (SARS), learning from the West African EVD outbreak and South Korean experience to inform an options plan.

A further aspect of the quarantine/self-isolation debate was a treatment protocol for dealing with the asymptomatic but high risk contacts. This was particularly significant for those with a pre-existing medical condition requiring treatment such as dialysis or who may require a known medical intervention due to pregnancy. The group discussed if these contacts should be treated as infected and how this might work. There was a detailed discussion on the definition of high risk contacts (see action 10).

The group did not resolve the quarantine/self-isolation issues. The outcome noted was that a definitive plan should be developed exploring the cost benefits and

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[6] CDC defines the terms as; isolation separates sick people with a contagious disease from people who are not sick. Quarantine separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick.

evidence to support or refute the various options and recommend a viable approach and options for symptomatic versus asymptomatic patients.

Action identified 7:

Produce an options plan using extant evidence and cost benefits for quarantine versus self-isolation for a range of contact types including symptomatic, asymptomatic and high risk groups

Community sampling was another important topic in the exercise and participants indicated that a clear plan should be developed including how community sampling would be achieved and how clinical assessment could be conducted. The NHS noted that '*PHE recognizes no systematic way of doing the sampling*'. It was observed that there was no clearly identified professional who was qualified to assess if an asymptomatic contact can remain at home versus hospital admission. PHE stated that asymptomatic patients could have active health surveillance and contact PHE if symptoms develop.

Linked to this was a requirement for a tool/system to collect data from contacts and ensure that it was effective and appropriate. A web-based tool was suggested as a possible approach; this would be a live database of contacts with classifications, current state and other data germane to the situation.

Action identified 8:

Develop a plan for the process of community sampling in a MERS-CoV outbreak

Action identified 9:

Develop a live tool or system to collect data from MERS-CoV contacts

There was a detailed examination of the definition of high risk contacts via close contact[7]. The PHE algorithm defines close contact as '*any person who had prolonged face-to-face contact (>15 minutes) with a symptomatic confirmed case of MERS-CoV in a household or other closed setting*'. The group reflected if this was the correct definition and what actually constituted 'high risk exposure' and wanted to explore what is considered good practice in other areas of the world and how the global health community defines such a contact. The group considered whether the PHE definition was consistent with international practices. The definition should be based

[7] As per the MERS-CoV close contact algorithm - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/422713/Algorithm_contact_v16.pdf

on current credible evidence; this will then direct how precautionary the definition needs to be.

The group also considered a set of pre-prepared FAQs for such high risk contact to be beneficial; this would include information about sharing beds and restrictions on family members.

Action identified 10:

Research, review and identify good practice for definitions for close/high risk contacts and recommend a definition for MERS-CoV

Action identified 11:

Prepare a FAQ for MERS-CoV close/high risk contacts

5.1.4 Coordination of public messaging

Coordination of the communication message was considered of vital importance in the effective management of the response. It was highlighted that all parties needed to ensure that communications were consistent. The group agreed that '*public messaging needs to be reassuring, current and accurate*'.

Coordination of the communication message covered two main areas; health staff and the public. How to effectively interface with frontline staff and get clinical engagement was raised. This interface could be used to assess the impact of MERS-CoV on NHS staff. It was suggested texting (SMS) or the British Medical Association (BMA) may be viable routes but this area required more exploration to cover regular updates and urgency of message.

The consistency of message and proportionality of response was highlighted. The public may cite pandemic H1N1 2009 as an overreaction and this may undermine the integrity of the PH message. It was considered fundamental to have a consistent health message to ensure confidence in the source and message being given.

Cultural sensitivities although not discussed in the wider group were discussed within the organisational conversations. The scenario indicated that the affected group were mainly from the Muslim community and the messaging may need to be focussed and targeted differently for different sections of the community.

Action identified 12:

Produce a briefing paper that considers a range of communication options to interface with NHS staff to gain staff engagement

6. Conclusions

Exercise Alice was well received by all the participants who are to be commended for their positive engagement and support to achieve the aim and objectives of the exercise.

The exercise identified 12 specific actions and four key themes were captured. These included quarantine versus self-isolation and the clarity required about the options; PPE level and the need for instruction on use; community sampling planning and effective proportional communications to both front line staff and consistent public messaging.

Finally, all the participants in this exercise considered that the event was extremely useful in providing a unique opportunity to spend a day with counterparts and clinical experts discussing the challenge that MERS-CoV could present.

The exercise did highlight a number of briefings, protocols, training and preparatory materials development required to support an effective MERS-CoV response and this would be the next progression.

Appendix A – Summary of lessons/actions identified

Action No.	Description of Lesson Identified	Action allocation
To explore and confirm the health capabilities, capacities, protocols and resources, including surge arrangements		
1	The development of MERS-CoV specific instructional video on PPE level and use	
2	Develop a protocol to enable the arrangement and conduct of timely clinical trials for new or experimental treatments	
3	Develop a set of guidelines to prioritise treatments when there are limited stocks/doses available	
4	Develop a MERS-CoV serology assay procedure to include a plan for a process to scale up capacity	
To explore and confirm national command, control, communication and coordination arrangements		
5	Produce a briefing paper on the South Korea outbreak with details on the cases and response and consider the direct application to the UK including port of entry screening	
6	Produce an extensive summary of the EVD lessons identified with a section on applicability to MERS-CoV	
To explore the capability for contact tracing and quarantining of possible MERS-CoV cases		
7	Produce an options plan using extant evidence and cost benefits for quarantine versus self-isolation for a range of contact types including symptomatic, asymptomatic and high risk groups	
8	Develop a plan for the process of community sampling in a MERS-CoV outbreak	
9	Develop a live tool or system to collect data from MERS-CoV contacts	
10	Research, review and identify good practice for definitions for close/high risk contacts and recommend a definition for MERS-CoV	
11	Prepare a FAQ for MERS-CoV close/high risk contacts	
To explore and confirm coordination of public messaging associated with a large number of MERS-CoV cases		
12	Produce a briefing paper that considers a range of communication options to interface with NHS staff to gain staff engagement	

Appendix B – Programme of the day

TIME	SESSIONS
From 09.30	**Registration**
10.00	**Welcome** **Exercise briefing** **Introduction of the opening scenario**
10.30	**Session 1:** Initial and public health response Participants work in groups to discuss the issues/risks/challenges raised by the scenari
11.15	**Clinical advisory group meeting** Participants will reconvene to discuss a coordinated response focused on the initial response and public health aspects
12.15	**Facilitated discussion session to identify key issues**
12.30	**Lunch**
13.15	**Session 2:** Health care aspects **Introduction of the extended outbreak scenario** Participants work in groups to discuss the issues/risks/challenges raised by the update scenario
14.00	**Clinical advisory group meeting** Participants will reconvene to discuss a coordinated response focused on the extended response and health care aspects
15.00	**Facilitated discussion session to identify key issues on extended and overall response**
15.45	**Next steps and wrap up summary**
16.00	**End of exercise**

Appendix C – List of participants

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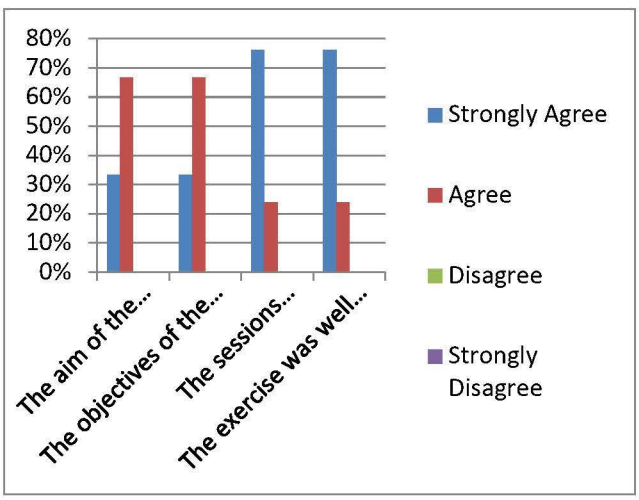
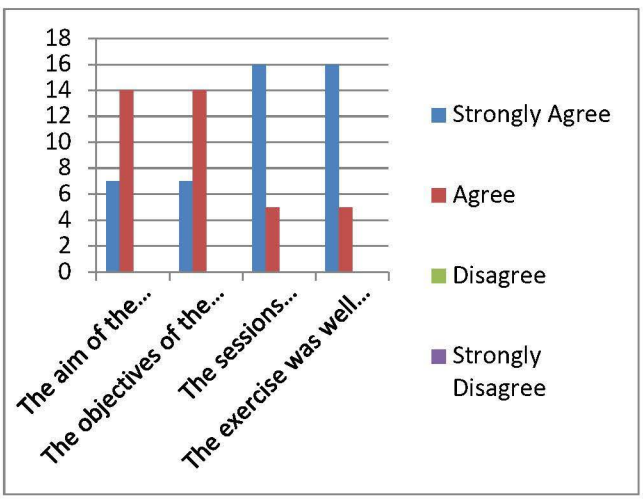
Appendix D – Participant feedback on the exercise

There were 43 attendees at the exercise. This comprised 32 participants, 6 observers and 5 members of Exercise Control. Feedback on the exercise is displayed below. 100% of responding participants strongly agreed or agreed that the aim of the exercise was 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	7	14	0	0	0	21
The objectives of the exercise were achieved	7	14	0	0	0	21
The sessions generated valuable discussions and highlighted importnt areas for development	16	5	0	0	0	21
The exercise was well organised	16	5	0	0	0	21

	Strongly Agree	Agree	Disagree	Strongly Disagree	Did Not Answer	
The aim of the exercise was achieved	33%	67%	0%	0%	0%	100%
The objectives of the exercise were achieved	33%	67%	0%	0%	0%	100%
The sessions generated valuable discussions and highlighted importnt areas for development	76%	24%	0%	0%	0%	100%
The exercise was well organised	76%	24%	0%	0%	0%	100%





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2. PHE MERS-CoV case algorithm (5 November 2015)

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3. PHE MERS-CoV/Avian Influenza Primary Care Algorithm (June 2015)

https://www.gov.uk/government/publications/mers-cov-and-avian-influenza-primary-care

4. PHE Referral pathway of positive MERS-CoV samples to the National Reference Laboratory (September 2015)

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8. NHS England: Infectious Respiratory Viruses – the use of facemasks and respirators (December 2014)

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9. Public Health England Respiratory virus unit (RVU): diagnostic services

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10. Epidemiological protocols to assess early Middle East respiratory syndrome coronavirus (MERS-CoV) cases and their close contacts in the UK

https://www.gov.uk/government/publications/mers-cov-epidemiological-protocols-to-assess-cases-and-their-close-contacts-in-the-uk

11. Public Health England MERS-CoV minimum data set for possible cases (November 2013)

https://www.gov.uk/government/publications/mers-cov-minimum-data-set-form-for-possible-cases

Glossary

BMA	British Medical Association
CMO	Chief Medical Officer
CCS	Civil Contingencies Secretariat
DA	Devolved Administration
ECDC	European Centre of Disease Prevention and Control
ECMO	Extracorporeal Membrane Oxygenation
EPRR	Emergency Preparedness, Resilience and Response
ERD	Emergency Response Department
EVD	Ebola Virus Disease
EWRS	Early Warning Reporting System
FAQ	Frequently Asked Questions
HART	Hazardous Area Response Team
HCID	High Consequence Infectious Disease
HCW	Health Care Workers
IDU	Immunisation and Diagnosis Unit
IHR	International Health Regulations
ISARIC	International Severe Acute Respiratory and Emergency Infection Consortium
KSA	Kingdom of Saudi Arabia
MERS-CoV	Middle East Respiratory Syndrome Coronavirus
MIP	Major Incident Plan
NARU	National Ambulance Resilience Unit
NHS	National Health Service

PHE	Public Health England
PPE	Personal Protective Equipment
RVU	Respiratory Virus Unit
SARS	Severe Acute Respiratory Syndrome
SCG	Strategic Coordinating Group
SME	Subject Matter Expert
SMS	Short Message Service
WHO	World Health Organization

Acknowledgements

Many people contributed to the planning, delivery and evaluation of this exercise. The exercise planning group would like to thank them for their time and efforts, with particular thanks to the participants.

Disclaimer

The exercise scenarios are entirely fictitious and are intended for training and exercise purposes only. The exercise report is provided by Public Health England and is subject to

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 lessons identified 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 lessons identified are reviewed by the appropriate organisations to assess if any further action is required.