



Public Health
England

Protecting and improving the nation's health

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



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.

(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) programme⁵

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 isolation⁶. 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

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 contact⁷. 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