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# Middle East Respiratory Syndrome (MERS): Is It a Health Emergency?

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**M**iddle East Respiratory Syndrome (MERS) is a serious viral respiratory illness first reported in Saudi Arabia in 2012.<sup>1</sup> The global count of MERS cases increased sharply this spring. As of May 28, 2014, 636 MERS cases (including 193 deaths) have been reported to the World Health Organization (WHO).<sup>2</sup> To date, cases have originated from countries in or near the Arabian Peninsula: Saudi Arabia, the United Arab Emirates, Qatar, Oman, Jordan, Kuwait, Yemen, and Lebanon. Cases have spread to additional countries—the United Kingdom, France, Tunisia, Italy, Malaysia, the Philippines, Greece, Egypt, the United States, and the Netherlands—in travelers from affected countries in or near the Arabian Peninsula. Health officials are investigating the possible role of animals as the ultimate source of MERS infections.<sup>3</sup> At this time, person-to-person transmission appears to require close contact; a number of health care workers have been infected after contact with infected patients. On May 17, 2014, the Centers for Disease Control and Prevention (CDC) announced that two imported cases of MERS have been reported in the United States.<sup>4</sup> Both individuals have recovered.

International and U.S. health officials respond to infectious diseases threats every day and can often address threats like MERS by expanding routine activities. They may also have authority to take additional steps in an emergency, in order to prevent serious public health consequences. Emergency authorities may be broad; more commonly they are narrow and tailored to specific response actions. This report describes key MERS response activities and the emergency authorities available to health officials when routine activities are insufficient to address a public health threat.

## WHO Actions

WHO collaborates with countries to implement current International Health Regulations (IHR [2005]),<sup>5</sup> to which 194 countries, including the United States, are signatories (called “State Parties”). Although IHR (2005) lacks an enforcement mechanism, WHO asserts that State Party interests are served by compliance. Under IHR (2005) State Parties agree to, among other things,

- designate a state “Focal Point” for contact;
- develop, strengthen, and maintain capacities for surveillance and response;
- notify WHO and provide information regarding events that may constitute a *public health emergency of international concern (PHEIC)*;<sup>6</sup>
- collaborate with other States Parties and with WHO on IHR (2005) implementation; and

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<sup>1</sup> Centers for Disease Control and Prevention (CDC), “Middle East Respiratory Syndrome (MERS),” <http://www.cdc.gov/CORONAVIRUS/MERS/INDEX.HTML>.

<sup>2</sup> World Health Organization (WHO), “Coronavirus infections,” [http://www.who.int/csr/disease/coronavirus\\_infections/en/](http://www.who.int/csr/disease/coronavirus_infections/en/).

<sup>3</sup> WHO, “Frequently Asked Questions on Middle East Respiratory Syndrome Coronavirus (MERS-CoV),” [http://www.who.int/csr/disease/coronavirus\\_infections/faq/en/](http://www.who.int/csr/disease/coronavirus_infections/faq/en/).

<sup>4</sup> CDC, “MERS in the U.S.,” <http://www.cdc.gov/CORONAVIRUS/MERS/US.html>.

<sup>5</sup> WHO, “International Health Regulations (IHR),” [http://www.who.int/topics/international\\_health\\_regulations/en/](http://www.who.int/topics/international_health_regulations/en/).

<sup>6</sup> WHO, “IHR Procedures concerning public health emergencies of international concern (PHEIC),” <http://www.who.int/ihr/procedures/pheic/en/>.

- respond appropriately to WHO-recommended measures.

Upon the recommendation of an IHR Emergency Committee (EC), the WHO Director-General may declare a situation to be a PHEIC, and then may make temporary recommendations to affected countries or to all State Parties on matters of travel, surveillance, treatment, and infection control in order to stop the international spread of disease.<sup>7</sup>

WHO has convened five MERS EC meetings. After the most recent, on May 13, 2014, WHO stated:

... the Committee indicated that the seriousness of the situation had increased in terms of public health impact, but that there is no evidence of sustained human-to-human transmission. As a result of their deliberations, the Committee concluded that the conditions for a [PHEIC] have not yet been met.<sup>8</sup>

## **U.S. Federal and State Actions**

Public health authority in the United States generally rests with states, with two exceptions. The federal government regulates products in commerce, such as drugs, vaccines, and clinical tests. The federal government also has the power to tax and spend, and can impose requirements on the use of federal funds.

As a signatory to IHR (2005),<sup>9</sup> the United States has designated the Health and Human Services Secretary's Operations Center as the U.S. Focal Point.<sup>10</sup> Recognizing the nation's federalist form of government, the Council of State and Territorial Epidemiologists<sup>11</sup> (which represents these health officials) issued a position statement regarding diseases that states should promptly report to federal officials so that federal officials can meet U.S. obligations under IHR (2005).<sup>12</sup>

The federal government has assisted states and territories in expanding their ability to respond to public health threats through, among other things, the Public Health Emergency Preparedness cooperative agreement, a CDC grant program authorized and funded after the 2001 terrorist attacks.<sup>13</sup> This program has helped states to bolster surveillance and reporting for emerging infections such as MERS, and to conduct specialized laboratory testing. A test for MERS was

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<sup>7</sup> On May 5, 2014, a WHO Emergency Committee declared the resurgence of polio in parts of the world to be a Public Health Emergency of International Concern and recommended a number of control measures to be taken by affected countries; <http://www.who.int/mediacentre/news/statements/2014/polio-20140505/en/>.

<sup>8</sup> WHO, "WHO statement on the Fifth Meeting of the IHR Emergency Committee concerning MERS-CoV," May 14, 2014, <http://www.who.int/mediacentre/news/statements/2014/mers-20140514/en/>.

<sup>9</sup> CDC, "Global Health - International Health Regulations," <http://www.cdc.gov/globalhealth/ihregulations.htm>.

<sup>10</sup> U.S. Department of Health and Human Services (HHS), Office of the Assistant Secretary for Preparedness and Response, "HHS Secretary's Operations Center (SOC)," <http://www.phe.gov/Preparedness/responders/soc/Pages/default.aspx>. (Click "Cancel" at password prompt.)

<sup>11</sup> Council of State and Territorial Epidemiologists (CSTE), <http://www.cste.org/>.

<sup>12</sup> CSTE, "Events that May Constitute a Public Health Emergency of International Concern," position statement 07-ID-06, 2007, <http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/07-ID-06.pdf>.

<sup>13</sup> CDC, "Funding and Guidance for State and Local Health Departments," <http://www.cdc.gov/phpr/coopagreement.htm>.

developed by CDC after the disease emerged in 2012, and was provided to public health laboratories in a national network in 2013.<sup>14</sup>

In May 2013, the HHS Secretary invoked an emergency authority in order to make the new diagnostic test for MERS available to state and local health officials. The *Emergency Use Authorization* (EUA) is a specific authority that allows, when justified by a health emergency, the use of drugs, tests, and other medical products that are not approved by U.S. Food and Drug Administration (FDA), or that are not FDA-approved for the specific emergency purpose (or “indication”).<sup>15</sup> As per the law, the HHS Secretary determined that MERS posed a significant potential for a public health emergency with national security or health security implications for U.S. citizens living abroad, and that the situation justified authorization of the emergency use of the MERS diagnostic test.<sup>16</sup> The FDA subsequently issued an EUA for use of the test.<sup>17</sup>

Since the MERS virus was identified in 2012, the National Institutes of Health (NIH) has conducted or funded studies to develop vaccines and treatments, neither of which is available at this time.<sup>18</sup> However, in May 2014, researchers published findings showing that a number of currently approved antiviral drugs show promise as potential treatments for MERS infections.<sup>19</sup>

CDC disseminates information for clinicians,<sup>20</sup> issues travel advisories, and provides other education and outreach activities about infectious disease threats. Among other things, on May 24, 2014, CDC issued a Level 2 Travel Alert for MERS.<sup>21</sup> It encourages travelers to certain countries in or near the Arabian Peninsula (see **Figure 1**) to take simple precautions (such as hand-washing) to prevent the spread of germs, and provides technical infection control guidance<sup>22</sup> for people traveling to these countries to work in health care settings. In addition, health care workers worldwide are urged to consider a history of travel to designated countries in or near the Arabian Peninsula when evaluating patients with respiratory illness. For U.S. clinicians and health officials, CDC has published a map of key U.S. and Canadian entry points for travelers from Saudi Arabia and the United Arab Emirates to facilitate the prompt identification of travel-associated cases of MERS (see **Figure 2**).

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<sup>14</sup> See CDC, “The Laboratory Response Network,” <http://emergency.cdc.gov/lrn/>; and Association of Public Health Laboratories, “Public Health Laboratory Response to MERS-CoV May 2014,” <http://www.aphl.org/aphlprograms/infectious/Pages/MERS-Cov.aspx>.

<sup>15</sup> U.S. Food and Drug Administration (FDA), “Emergency Use Authorization,” <http://www.fda.gov/emergencypreparedness/counterterrorism/ucm182568.htm>.

<sup>16</sup> HHS, Office of the Assistant Secretary for Preparedness and Response, “Middle East Respiratory Syndrome Coronavirus (MERS-CoV),” determination, May 29, 2013, <http://www.phe.gov/emergency/news/healthactions/phe/Pages/mers-cov.aspx>. (Click “Cancel” at password prompt.)

<sup>17</sup> FDA, “2013 Coronavirus Emergency Use Authorization (Potential Emergency),” June 15, 2013, <http://www.fda.gov/medicaldevices/safety/emergencysituations/ucm161496.htm#coronavirus>.

<sup>18</sup> National Institutes of Health (NIH), National Institute of Allergy and Infectious Diseases (NIAID), “Coronaviruses,” <http://www.niaid.nih.gov/topics/coronavirus/Pages/default.aspx>.

<sup>19</sup> NIAID, “Screen of Existing Drugs Finds Compounds Active Against MERS Coronavirus,” press release, May 20, 2014, <http://www.niaid.nih.gov/news/newsreleases/2014/Pages/MERSrepurposing.aspx>.

<sup>20</sup> See for example CDC, “Middle East Respiratory Syndrome (MERS), Information for Healthcare Providers,” <http://www.cdc.gov/coronavirus/mers/hcp.html>.

<sup>21</sup> CDC, “Travelers’ Health: MERS in the Arabian Peninsula,” <http://wwwnc.cdc.gov/travel/notices/alert/coronavirus-saudi-arabia-qatar>.

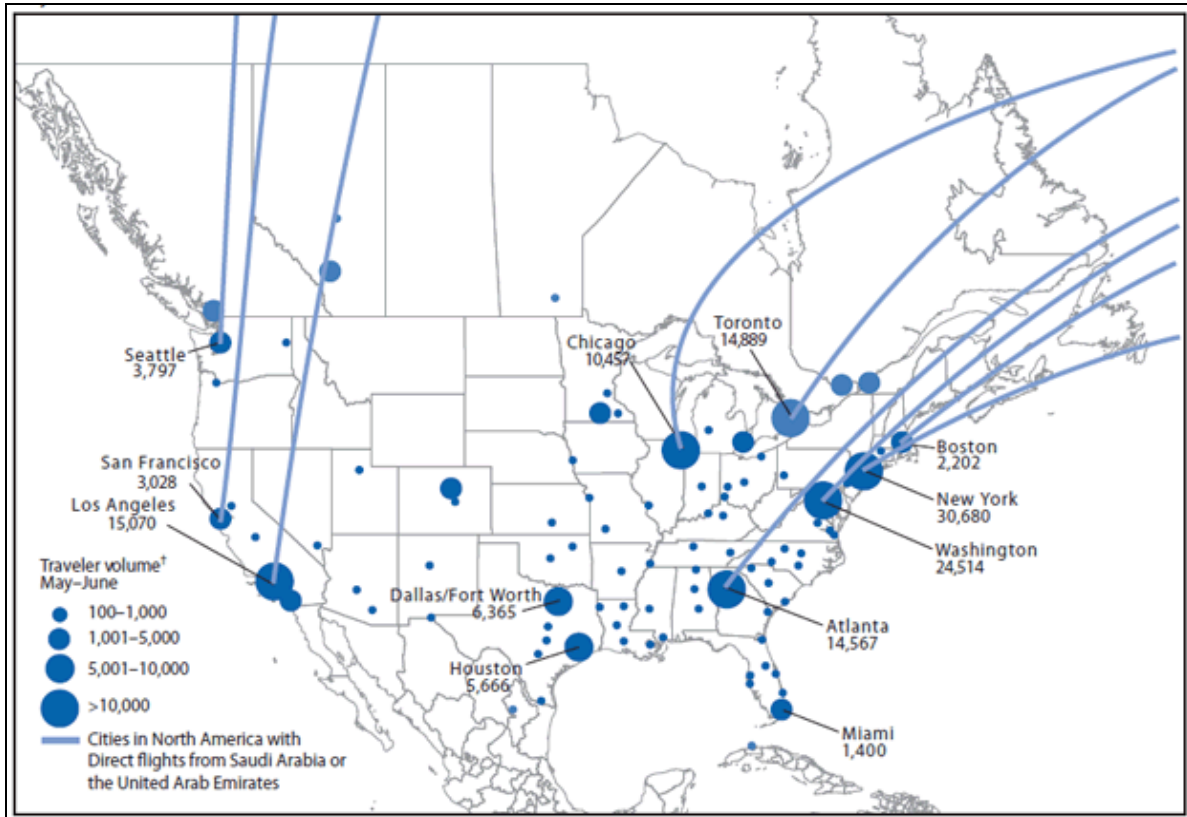
<sup>22</sup> CDC, “Interim Infection Prevention and Control Recommendations for Hospitalized Patients with Middle East Respiratory Syndrome Coronavirus (MERS-CoV),” <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>.

**Figure 1. Countries in or Near the Arabian Peninsula for Which Travel Precautions Are Recommended**



**Source:** Adapted by CRS from CDC, "Middle East Respiratory Syndrome," <http://www.cdc.gov/coronavirus/mers/index.html>.

**Figure 2. Points of Entry and Volume of Travelers on Flights to the United States and Canada from Saudi Arabia and the United Arab Emirates, May–June 2014\***



**Source:** CDC, “First Confirmed Cases of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Infection in the United States, Updated Information on the Epidemiology of MERS-CoV Infection, and Guidance for the Public, Clinicians, and Public Health Authorities—May 2014,” *MMWR*, vol. 63, no. 19 (May 16, 2014), pp. 431–436, <http://www.cdc.gov/mmwr/pdf/wk/mm6319.pdf>.

**Notes:** \*Excludes cities with fewer than 100 travelers from affected areas. †Based on total number of arrivals at final destination in North America.

Identification of the two imported cases of MERS in the United States in May 2014 appears to have proceeded as envisioned by emergency planners. Clinicians, suspecting the possibility, alerted local public health officials. These officials ran the CDC-developed MERS laboratory tests locally. They notified CDC of the positive MERS tests and implemented isolation and quarantine protocols that had previously been developed.<sup>23</sup> CDC worked with airlines to contact passengers who shared flights with the two imported MERS cases; none of the passengers was found in follow-up to have contracted the infection.<sup>24</sup>

<sup>23</sup> CDC, “First Confirmed Cases of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Infection in the United States, Updated Information on the Epidemiology of MERS-CoV Infection, and Guidance for the Public, Clinicians, and Public Health Authorities—May 2014,” *MMWR*, vol. 63, no. 19 (May 16, 2014), pp. 431–436, <http://www.cdc.gov/mmwr/pdf/wk/mm6319.pdf>.

<sup>24</sup> For information about CDC’s role in airline contact investigation, see CDC, “Protecting Travelers’ Health from Airport to Community: Investigating Contagious Diseases on Flights,” <http://www.cdc.gov/quarantine/contact-investigation.html>. Airlines’ provision of flight manifests and most other information to health authorities is voluntary.

## Next Steps

International and U.S. health officials are to continue to monitor the spread of MERS, paying particular attention to incidents of person-to-person transmission, and to the genetic makeup of circulating MERS viruses. Efforts to develop treatments and a vaccine will likely continue. WHO is expected to convene the MERS Emergency Committee to review the situation periodically or when needed due to a change in disease transmission, genetic makeup, or other signal for concern. Health officials in Saudi Arabia are implementing enhanced disease surveillance and disseminating prevention messages to the public in anticipation of the annual Ramadan and Hajj pilgrimages in the summer and fall.<sup>25</sup>

Much of the U.S. response to MERS has involved scaling up routine activities under standing authorities. As noted, the HHS Secretary has invoked a narrow emergency authority in order to make the MERS test available without FDA approval. Additional actions and emergency authorities are available to U.S. officials when needed to manage the spread of communicable diseases. For example, the authority to impose quarantines or to close congregation points such as schools and malls generally rests with state and local officials, while federal officials have specific authorities regarding disease control among international travelers and certain U.S. entrants. Under certain conditions the HHS Secretary may waive some Medicare and Medicaid requirements, allowing hospitals to, for example, implement triage and isolation protocols that would otherwise not be permissible.<sup>26</sup>

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<sup>25</sup> Aya Batrawy, "As MERS Virus Spreads, Saudis Question Mecca Preparedness Ahead of High Pilgrimage Season," *Associated Press*, May 15, 2014; and Ziad A. Memish et al., "Hajj: Infectious Disease Surveillance and Control," *The Lancet*, published online May 21, 2014, <http://www.thelancet.com/journals/lancet/onlinefirst>.

<sup>26</sup> These authorities and others that may be useful in managing an infectious disease threat are discussed in CRS Report R40560, *The 2009 Influenza Pandemic: Selected Legal Issues*, coordinated by (name redacted) and (name redacted).



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