

**Title:** Field Epidemiology Training Program in Action – 2012 MERS-CoV in Jordan

**Activities:** Establish a Field Epidemiology Training Program; Train workforce in epidemic intelligence; Determine the existence of an outbreak or epidemic; Interview initial case(s); Confirm diagnoses

**Stakeholders:** National and subnational health authorities

**Phases:** Detection; Intervention

**Years:** 2012

**Countries:** Jordan

**Agent:** Middle East Respiratory Syndrome - coronavirus (MERS-CoV)

**Case study prepared by:** Madison Berry, October 18, 2019

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Since 1980, Field Epidemiology Training Programs (FETPs) have trained epidemiologists in over 70 countries to strengthen national level disease surveillance, disease outbreak response, and public health workforce.<sup>1</sup> FETPs were originally modeled after the U.S. Centers for Disease Control and Prevention's (CDC) Epidemic Intelligence Service (EIS) program, but individual countries own their own FETPs so trainings can be tailored to meet country needs.<sup>2</sup> FETPs place an emphasis on fieldwork to learn epidemiological skills, therefore program residents spend approximately 20-25% of their time in the classroom while the other 75-80% is dedicated to working in the field.<sup>3</sup>

FETPs are supported through regional and global networks. The global network that coordinates all of the programs is the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET).<sup>4</sup> TEPHINET focuses on quality improvement of national programs through their accreditation system, mobilizing a strong and qualified workforce for emergency

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<sup>1</sup> About FETP | Division of Global Health Protection | Global Health | CDC. Centers for Disease Control and Prevention, <https://www.cdc.gov/globalhealth/healthprotection/fetp/about.html>

<sup>2</sup> André, A., Lopez, A., Perkins, S., Lambert, S., Chace, L., Noudeke, N....Pedalino, B. (2017). Frontline Field Epidemiology Training Programs as a Strategy to Improve Disease Surveillance and Response. *Emerging Infectious Diseases*, 23(13). <https://dx.doi.org/10.3201/eid2313.170803>.

<sup>3</sup> Field Epidemiology Training Program (FETP) Fact Sheet. Centers for Disease Control and Prevention <https://www.cdc.gov/globalhealth/healthprotection/resources/fact-sheets/fetp-factsheet.html>

<sup>4</sup> About. TEPHINET, <https://www.tephinet.org/about>.

outbreaks, exchanging knowledge, and providing operational support country programs.<sup>5</sup> In addition, there are five regional networks, covering Latin America (REDSUR), Europe (EPIET), the Eastern Mediterranean (EMPHNET), Africa (AFENET), and Southeast Asia (SAFETYNET), each focused on the health needs and priorities of its respective region. National FETPs are therefore members of their regional network as well as TEPHINET.

### **FETP in Action in Jordan**

The Jordan FETP (J-FETP) was established in 1998 with assistance from both CDC and the United States Agency for International Development (USAID),<sup>6</sup> and is a member of EMPHNET and TEPHINET.<sup>7,8</sup> It is housed in the Primary Healthcare Administration within the Jordan Ministry of Health (MOH).

Middle East respiratory syndrome coronavirus (MERS-CoV) is a coronavirus, which affects the respiratory tract. It was first identified in September, 2012 in Saudi Arabia, and as of July 2019, 2,458 cases of MERS-CoV have been laboratory-confirmed, and 848 cases have resulted in death.<sup>9,10</sup> In 2012, J-FETP investigated a disease outbreak that would eventually be identified as MERS-CoV.<sup>11</sup>

In April 2012, eleven cases of suspected pneumonia were identified in Zarqa City, Jordan that lead to two deaths.<sup>12</sup> At the time, public health authorities were unable to identify the cause of the outbreak. When MERS-CoV was identified months later in September 2012, stored specimens from the two deaths in the April 2012 outbreak were tested and both came back as positive for MERS-CoV.<sup>13</sup>

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<sup>5</sup> What We Do. TEPHINET, <https://www.tephinnet.org/about/what-we-do>.

<sup>6</sup> Jordan Field Epidemiology Training Program. TEPHINET, <https://www.tephinnet.org/training-programs/jordan-field-epidemiology-training-program>.

<sup>7</sup> Jordan Field Epidemiology Training Program (J-FETP). EMPHNET, [http://emphnet.net/?country\\_programs=jordan-fetp](http://emphnet.net/?country_programs=jordan-fetp)

<sup>8</sup> Jordan Field Epidemiology Training Program. TEPHINET.

<sup>9</sup> Middle East respiratory syndrome coronavirus (MERS-CoV). World Health Organization, <https://www.who.int/emergencies/mers-cov/en/>

<sup>10</sup> Middle East respiratory syndrome coronavirus (MERS-CoV). World Health Organization

<sup>11</sup> Al Nsour, M., Iblan, I., & Tarawneh, M. R. 2018. Jordan Field Epidemiology Training Program: Critical Role in National and Regional Capacity Building. *JMIR medical education*, 4(1), e12. [10.2196/mededu.9516](https://doi.org/10.2196/mededu.9516)

<sup>12</sup> European Centre for Disease Prevention and Control (ECDC) 2012. Communicable Disease Threats Report, Week 18, 29 April–5 May 2012, <https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-29-april-5-may-2012-week-18>

<sup>13</sup> Al-Abdallat, M. M., Payne, D. C., Alqasrawi, S., Rha, B., Tohme, R. A., Abedi, G. R., ... Jordan MERS-CoV Investigation Team (2014). Hospital-associated outbreak of Middle East respiratory syndrome coronavirus: a serologic, epidemiologic, and clinical description. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*, 59(9), 1225–1233. doi: [10.1093/cid/ciu359](https://doi.org/10.1093/cid/ciu359)

After serological testing for MERS-CoV developed shortly after its initial discovery, the Jordan MOH, the CDC, and other partners in Jordan, including J-FETP, conducted testing of the specimens from the April 2012 outbreak to identify if the surviving individuals had MERS-CoV antibodies. They were looking to identify transmission patterns and additional clinical aspects of the virus.<sup>14</sup>

The J-FETP team, working with partners, conducted interviews and collected serological samples from surviving and available patients of the outbreak, members of the survivor's households, a sample of hospital staff from each of the three hospitals patients of the outbreak were admitted to, and fieldworkers from Jordan's MOH. 124 serological samples and interviews were obtained including 9 of the patients who met the original case definition, 26 household contacts, and 89 health care and allied professionals who did not meet the original case definition. The study identified 7 previously unconfirmed cases of MERS-CoV from the April 2012 outbreak, including six cases that met the initial case definition and one unexpected case that did not meet the initial case definition.<sup>15</sup>

The J-FETP participated in the epidemiological investigations of the outbreak and published findings in the peer reviewed literature.<sup>16,17</sup> Their work in the MERS-CoV outbreak is a direct example of how FETP programs support national level public health surveillance and outbreak response.<sup>18</sup>

**Please include case study summary text below this line.**

The Jordan Field Epidemiology Training Program (J-FETP) provided important contributions to the retrospective investigation of the April 2012 outbreak of MERS-CoV in Jordan. At the time of the original investigation, cases were identified as pneumonia. After the disease was identified in September 2012, the J-FETP worked on retrospectively investigating the disease, diagnosing unsuspected cases, and confirming diagnosis.

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<sup>14</sup> Al-Abdallat, M. M., Payne, D. C., Alqasrawi, S., Rha, B., Tohme, R. A., Abedi, G. R., ... Jordan MERS-CoV Investigation Team (2014). Hospital-associated outbreak of Middle East respiratory syndrome coronavirus: a serologic, epidemiologic, and clinical description.

<sup>15</sup> Al-Abdallat, M. M., Payne, D. C., Alqasrawi, S., Rha, B., Tohme, R. A., Abedi, G. R., ... Jordan MERS-CoV Investigation Team (2014). Hospital-associated outbreak of Middle East respiratory syndrome coronavirus: a serologic, epidemiologic, and clinical description.

<sup>16</sup> Al Nsour, M., Iblan, I., & Tarawneh, M. R. (2018). Jordan Field Epidemiology Training Program: Critical Role in National and Regional Capacity Building.

<sup>17</sup> Payne, D. C., Iblan, I., Alqasrawi, S., Al Nsour, M., Rha, B., Tohme, R. A., ... Jordan MERS-CoV Investigation Team (2014). Stillbirth during infection with Middle East respiratory syndrome coronavirus. *The Journal of infectious diseases*, 209(12), 1870–1872. doi: [10.1093/infdis/jiu068](https://doi.org/10.1093/infdis/jiu068)

<sup>18</sup> CDC Global Health - Infographics - FETP - Field Epidemiology Training Program - Disease Detectives in Action. Centers for Disease Control and Prevention, <https://www.cdc.gov/globalhealth/infographics/uncategorized/fetp.htm>