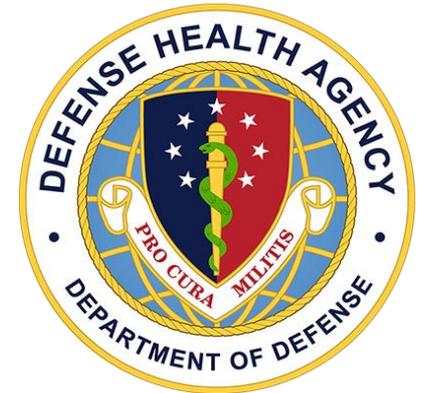


Department of Defense
Armed Forces Health Surveillance Branch
Global MERS-CoV Surveillance Summary
(11 JAN 2017)



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DEPARTMENT OF DEFENSE (AFHSB)

Global MERS-CoV Surveillance Summary #100

11 JAN 2017 (next Summary 25 JAN 2017)



CASE REPORT: As of 11 JAN 2017, 1,966 (+17) cases of Middle East respiratory syndrome coronavirus (MERS-CoV) have been reported, including at least 614 (+11) deaths (CDC reports at least 700 (+10) deaths as of 10 JAN) in the Kingdom of Saudi Arabia (KSA) (+17), Jordan, Qatar, United Arab Emirates (UAE), United Kingdom (UK), France, Germany, Tunisia, Italy, Oman, Kuwait, Yemen, Malaysia, Greece, Philippines, Egypt, Lebanon, Netherlands, Iran, Algeria, Austria, Turkey, Republic of Korea (ROK), China, Thailand, Bahrain, and the U.S. The KSA Ministry of Health (MOH) has classified 11 of the 17 new cases as primary; five as secondary (one secondary, asymptomatic household contact; three secondary, asymptomatic healthcare-acquired cases; and one secondary, symptomatic healthcare-acquired case). Additionally one death was announced in a case not previously reported with no details about the source of infection. The new cases were reported from eight different cities in KSA: Al-Khurma (1), Asir (2), Buraidah (6), Hufoof (1), Jeddah (1), Madinah (2), Najran (1), and Riyadh (3). On 6 JAN, local media in KSA reported that a hospital in Buraidah had been closed to visitors due to MERS-CoV; two of the six new cases reported in Buraidah are nosocomial infections. AFHSB's death count (Case Fatality Proportion (CFP) - 31%) includes only those deaths which have been publicly reported and verified. While CDC's death count (CFP - 37%) may present a more complete picture, it's unclear when and where those additional deaths occurred during the outbreak.

BACKGROUND: In SEP 2012, [WHO reported two cases of a novel coronavirus](#) (now known as MERS-CoV) from separate individuals – one with travel history to the KSA and Qatar and one in a KSA citizen. This was the sixth strain of human coronavirus identified (including SARS). Limited camel-to-human transmission of MERS-CoV has been proven to occur. The most recent known date of symptom onset is 25 DEC 2016. The KSA MOH has previously admitted to inconsistent reporting of asymptomatic cases. Due to these inconsistencies, it is also difficult to determine a cumulative breakdown by gender; however, AFHSB is aware of at least 604 (+3) cases in females to date. In its most recent MERS-CoV risk assessment on 5 DEC, WHO reported 20% of total MERS-CoV cases have been HCWs.

Limited human-to-human transmission has been identified in at least 57 (+3) spatial clusters as of 11 JAN, predominately involving close contacts. According to the KSA MOH, two of the three most recent clusters are nosocomial, and one is household-based. One of the nosocomial clusters occurred in Asir and involves at least three cases (two HCWs and one patient). The other nosocomial cluster involves at least two patients in Buraidah; the case or cases who were the source of these infections have not yet been identified. Finally, the suspected household cluster reported in Mecca in the previous summary has now been confirmed by WHO; a 47-year-old male from Mecca was reported as a primary case by the KSA MOH on 20 DEC, and on 21 DEC a 24-year-old male from Mecca was reported as a secondary, asymptomatic household contact.

DIAGNOSTICS/MEDICAL COUNTERMEASURES: On 6 DEC, Inovio Pharmaceuticals (U.S.) and GeneOne Life Science (ROK) announced additional funding had been awarded by the International Vaccine Institute (IVI) (ROK) to accelerate the progress of a DNA-based vaccine for MERS-CoV (GLS-5300), currently in Phase I clinical trials at the Walter Reed Army Institute of Research (WRAIR) in the U.S. The funding was provided as part of a \$34 million pledge made by IVI last year to support the development of an emergency use MERS-CoV vaccine for international use; IVI and GeneOne plan to jointly conduct a clinical trial of GLS-5300 in ROK. A research group from the Jenner Institute at the University of Oxford (UK) recently announced it had been awarded a grant from the UK Medical Research Council (MRC) to conduct a Phase I clinical trial of a newly developed MERS-CoV vaccine candidate in the UK, followed by a further trial in KSA. The vaccine is intended for dual use in humans and livestock. The Jenner Institute is currently working with collaborators in Morocco and KSA to undertake vaccine studies in camels.

RELEVANT STUDIES: On 4 MAR, CDC published a [study](#) that tested archived serum (from 2013-2014) from livestock handlers in Kenya for MERS-CoV antibodies to search for autochthonous MERS-CoV infections in humans outside of the Arabian Peninsula. The study found two (out of 1,122 samples) tested positive, providing evidence of previously unrecorded human MERS-CoV infections in Kenya.

(+xx) represents the change in number from the previous AFHSB Summary of 28 DEC 2016.

All information has been verified unless noted otherwise.

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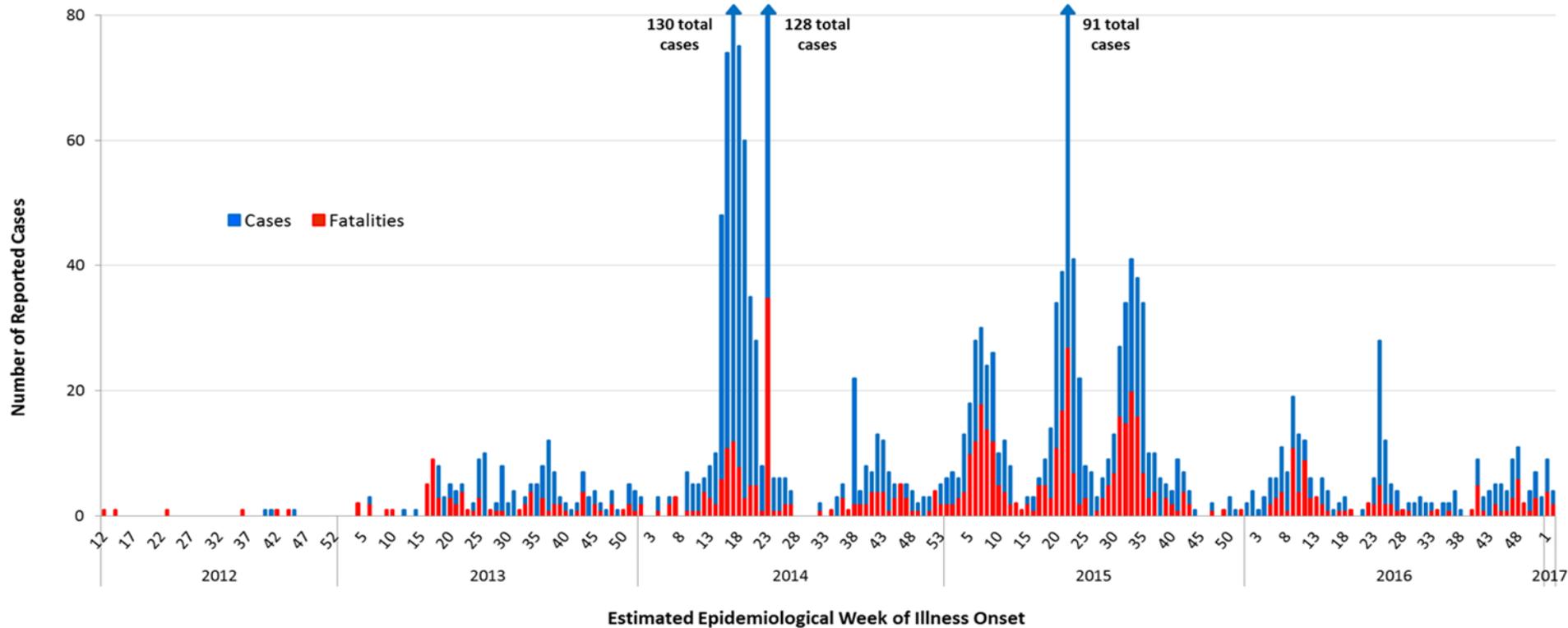
11 JAN 2017



INTERAGENCY/GLOBAL ACTIONS: On 9 JAN, media reported on an official [warning letter](#) from the FDA to a Saudi entrepreneur who runs a California-based raw milk network that stretches across the U.S. to stop making illegal claims about the therapeutic benefits of unpasteurized milk, including raw camel milk. A similar warning letter was sent by the FDA to the the owner of Hump-Back Dairies in Miller, MO, on 29 DEC 2016. WHO has cautioned against the consumption of raw or undercooked camel milk and meat because of risk of infection.

WHO convened the Tenth International Health Regulations (IHR) Emergency Committee on 2 SEP 2015 and concluded the conditions for a Public Health Emergency of International Concern (PHEIC) had not yet been met.

Global MERS-CoV Epidemiological Curve by Illness Onset



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MERS-CoV Diagnostics and Medical Countermeasures at DoD Laboratories



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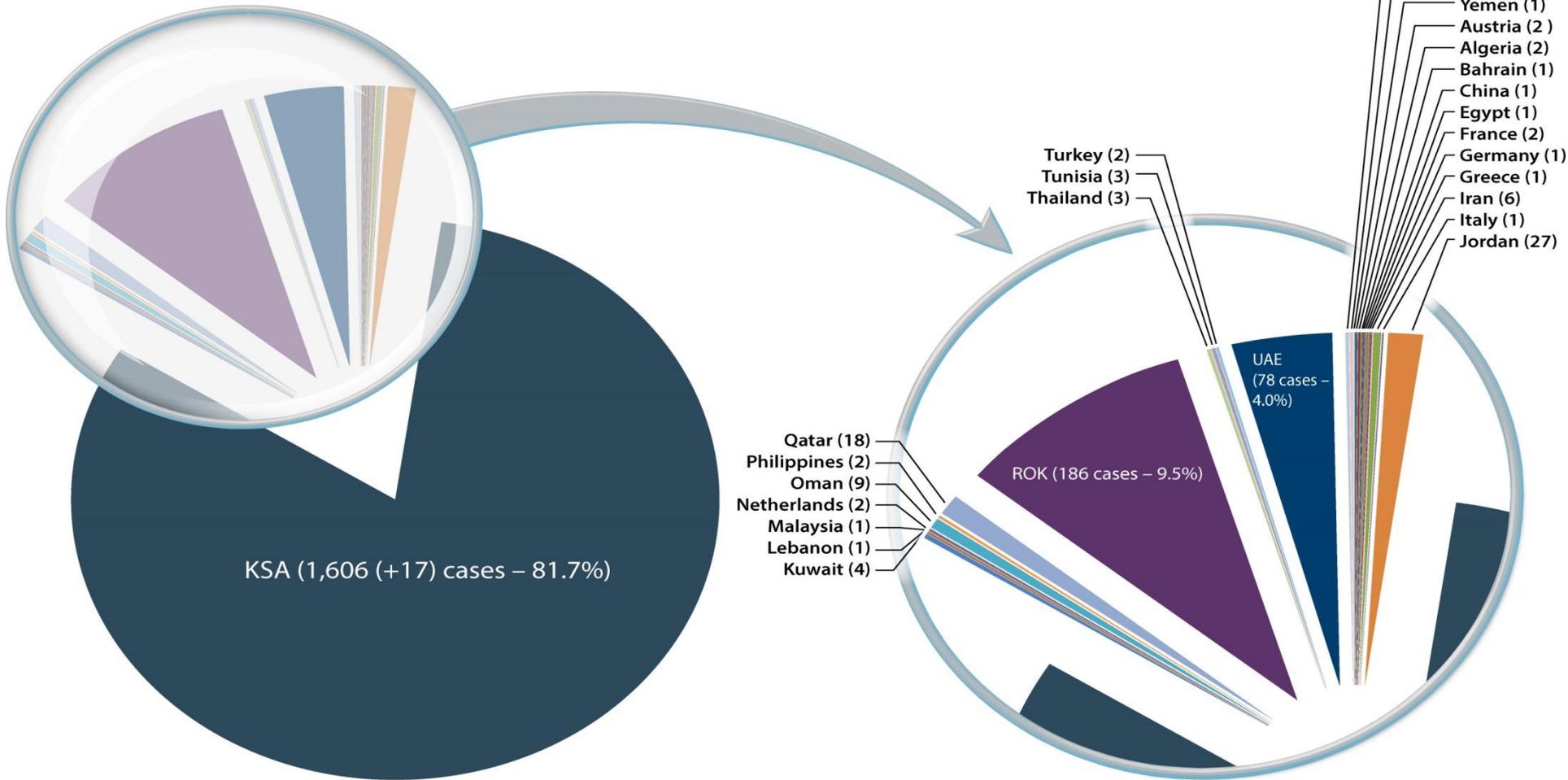
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Global Distribution of Reported MERS-CoV Cases* (SEP 2012–JAN 2017)

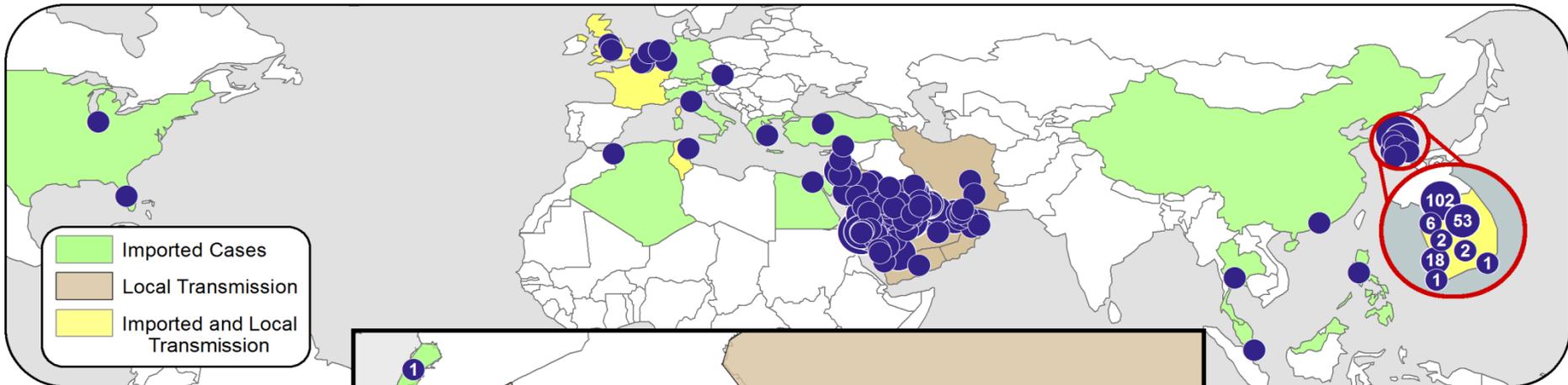


*Data includes confirmed, suspect and probable cases reported by WHO, CDC, and various country MOHs

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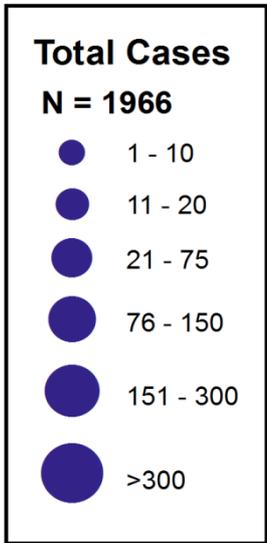
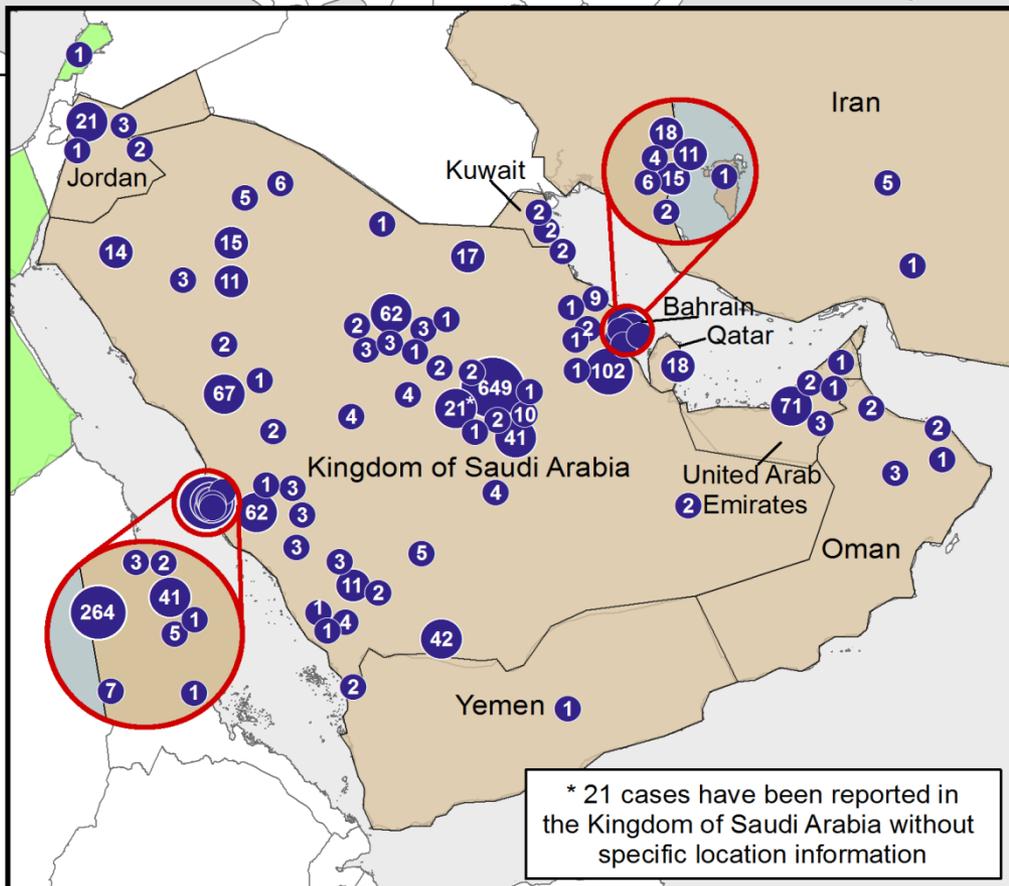
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Geographic Distribution of MERS-CoV Cases
1 APR 2012 - 11 JAN 2017



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* 21 cases have been reported in the Kingdom of Saudi Arabia without specific location information

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