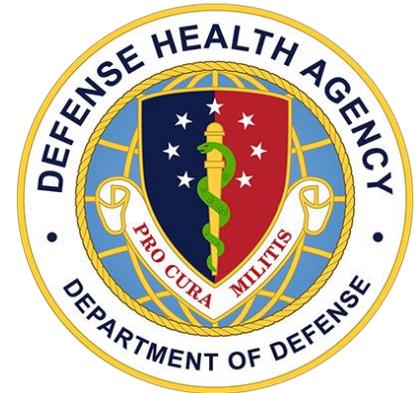


Department of Defense
Armed Forces Health Surveillance Branch
Global MERS-CoV Surveillance Summary
(24 MAR 2016)



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DEPARTMENT OF DEFENSE (AFHSB)

Global MERS-CoV Surveillance Summary #79

24 MAR 2016 (next Summary 7 APR)



CASE REPORT: As of 24 MAR 2016, 1,788 (+30) cases of Middle East respiratory syndrome coronavirus (MERS-CoV) have been reported, including 672 (+18) deaths, in the Kingdom of Saudi Arabia (KSA) (+30), 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, and the U.S. Since 22 FEB, there have been 31 (+17) cases and 16 deaths associated with the ongoing Buraidah cluster. Of the 31 cases, six (+5) occurred in HCWs, three of which were reported to be asymptomatic. On 5 MAR, the KSA Ministry of Health (MOH) confirmed these cases are the result of a nosocomial cluster at King Fahad Specialist Hospital. Media report many of these cases are dialysis patients and suffering from renal failure. Dialysis units have previously been associated with clusters of MERS-CoV transmission in KSA, specifically in the cities of Taif, Mecca, Jeddah, and Riyadh. The KSA MOH set up a new Central Command and Control Center in Buraidah to monitor disease transmission, coordinate the transfer of patients to other hospitals, and assist with ongoing prevention and control efforts. On 14 MAR, Egyptian media reported at least 10 camels transported through Sudan, origin unknown, tested positive for a coronavirus by the Egyptian Ministry of Agriculture. Some media report the camels were positive for MERS-CoV, while others do not specify the type of coronavirus; language translation has made de-conflicting these reports difficult. Media report at least 12 people traveling with the camels are being monitored for symptoms.

DIAGNOSTICS/MEDICAL COUNTERMEASURES: Clinical diagnostic testing is available at BAACH, NAMRU-3, LRMC, MAMC, NHRC, USAFSAM, SAMMC, TAMC, WBAMC, WRNMMC, and NIDDL (NMRC). Surveillance testing capability is available at NHRC, AFRIMS, NAMRU-2, NAMRU-3, NAMRU-6, USAMRU-K, and Camp Arifjan. All 50 state health laboratories and the NYC DOHMH were offered clinical testing kits. On 23 FEB 2016, AFHSB updated [MERS-CoV testing guidelines](#) for DoD which are aimed at capturing mild cases that may present in healthier populations such as DoD personnel. On 16 FEB 2016, [WRAIR began a phase 1 clinical trial](#) for the vaccine candidate (GLS-5300) developed by Inovio Pharmaceuticals and GeneOne Life Science. On 17 FEB, SAB Biotherapeutics announced a new human antibody therapeutic for MERS-CoV, which showed promising results in a [study](#) by NMRC and the University of Maryland School of Medicine. A recent [study](#) by the NIH showed promising results of a human monoclonal antibody, m336, as a prophylaxis for MERS-CoV in rabbits. Results also indicated antibody m336 prevented infection of the lower respiratory tract in previously infected rabbits.

INTERAGENCY/GLOBAL ACTIONS: 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) have not yet been met. However, the Committee also emphasized that they still have concerns as transmission from camels to humans continues in some countries, instances of human-to-human transmission continue to occur in health care settings, and asymptomatic cases are not always being reported as required. CDC maintains their [Travel Alert Level 2](#) for MERS-CoV in the Arabian Peninsula. In light of the recent increase in MERS-CoV cases, CDC issued a reminder to healthcare providers on 17 MAR to immediately report any patients under investigation (PUIs) for MERS-CoV to the state or local health department. CDC's website has additional information on [MERS-CoV Case Definitions](#) and [Guidelines for Collecting, Handling, and Testing Clinical Specimens for MERS-CoV PUIs](#).

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 human-to-human transmission has been identified in at least 37 spatial clusters predominately involving close contacts. Limited camel-to-human transmission of MERS-CoV has been proven to occur. The most recent known date of symptom onset is 11 MAR 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 509 (+10) cases in females to date. CDC reports 299 (+5) of the total cases have been identified as healthcare workers (HCWs). Of these, 190 were from KSA, 31 from UAE, 7 from Jordan, 2 from Iran, 1 from Tunisia, and 29 from ROK. 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. On 22 MAR, the KSA MOH reported in their [Weekly Monitor](#) publication that only 1.3% of nasopharyngeal swabs tested were positive for MERS-CoV in 2015. The MOH notes that “improper collection of nasopharyngeal swabs [can] result in false negative results, delays in confirmation and diagnosis, wasted resources and may cost lives” and issued a reminder of the correct specimen collection and storage procedures for HCWs in the weekly newsletter.

Text updated from the previous report will be printed in red; items in (+xx) represent the change in number from the previous Summary (9 MAR 2016).

All information has been verified unless noted otherwise. Sources include CDC, WHO, Science Translational Medicine, Journal of Infectious Diseases, Nature, and the KSA MOH.

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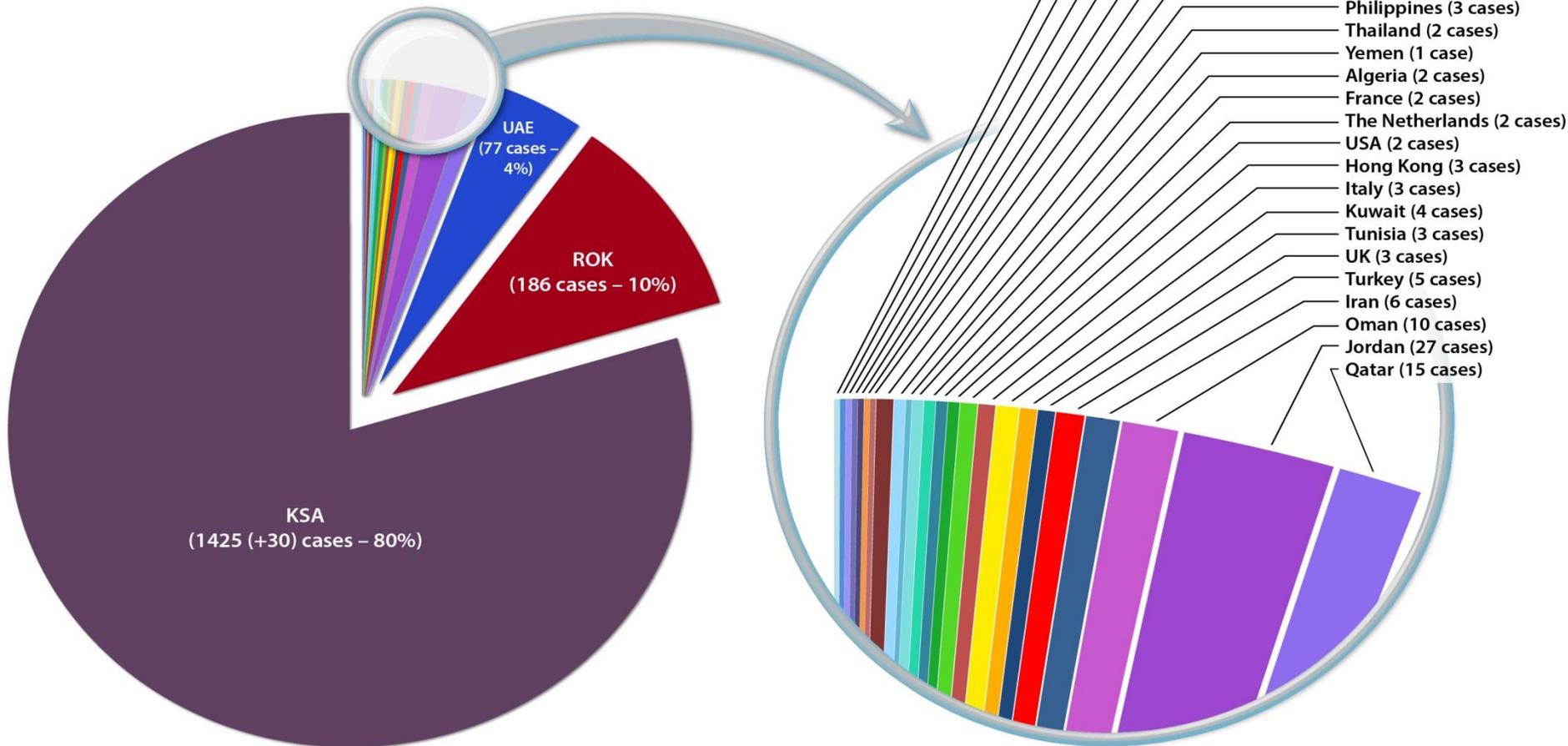
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Global MERS-CoV Surveillance Summary #79

24 MAR 2016



Global Distribution of Reported MERS-CoV Cases* (SEP 2012–MAR 2016)

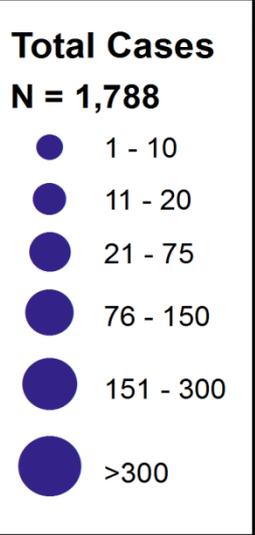
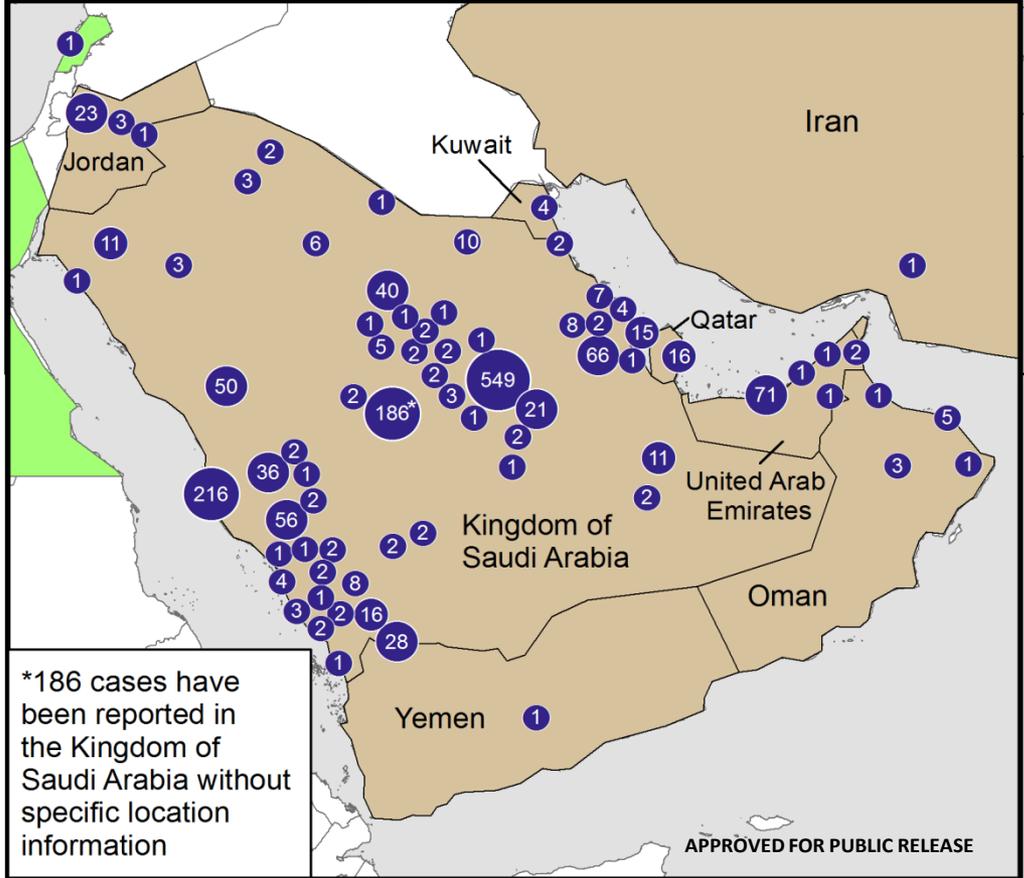
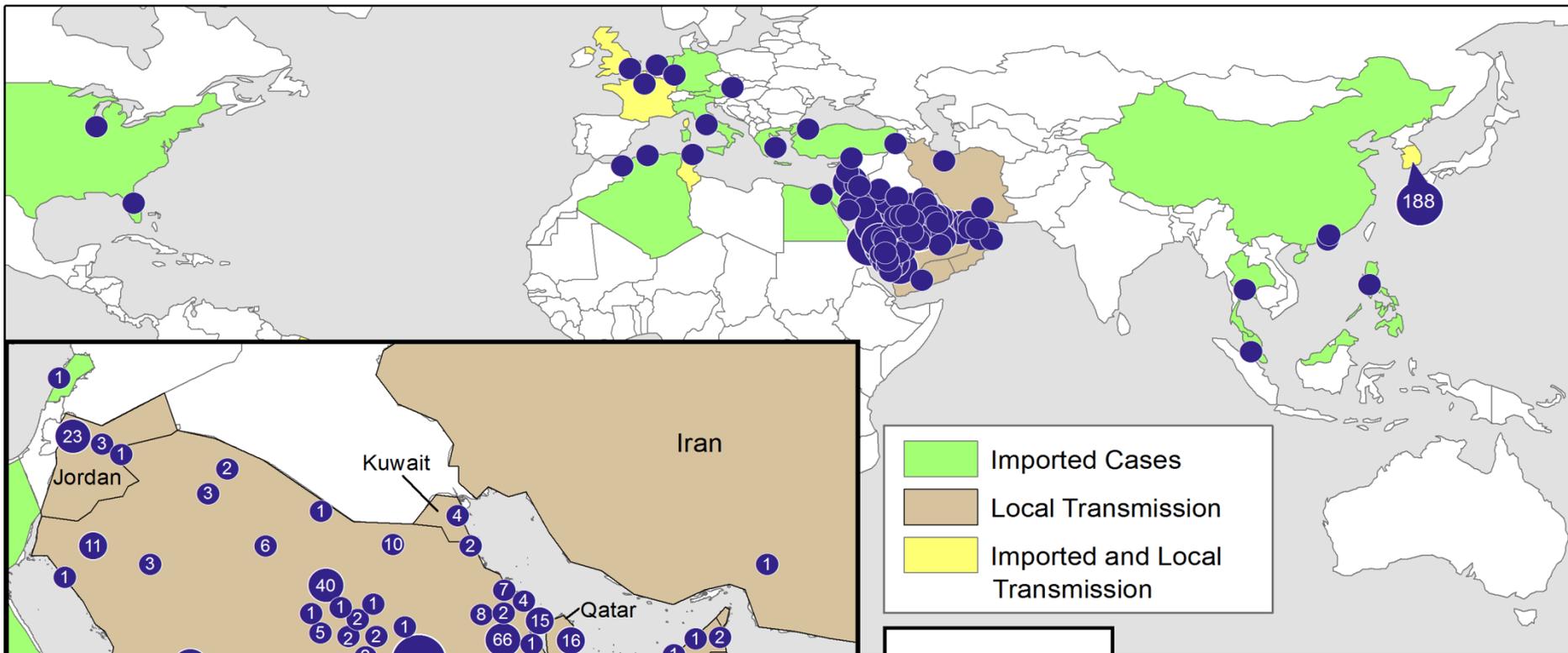


*Data includes confirmed, suspect and probable cases reported by WHO, CDC, and various country MOHs

[RETURN TO TOP](#)

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Geographic Distribution of MERS-CoV Cases
1 APR 2012 - 24 MAR 2016



RETURN TO TOP

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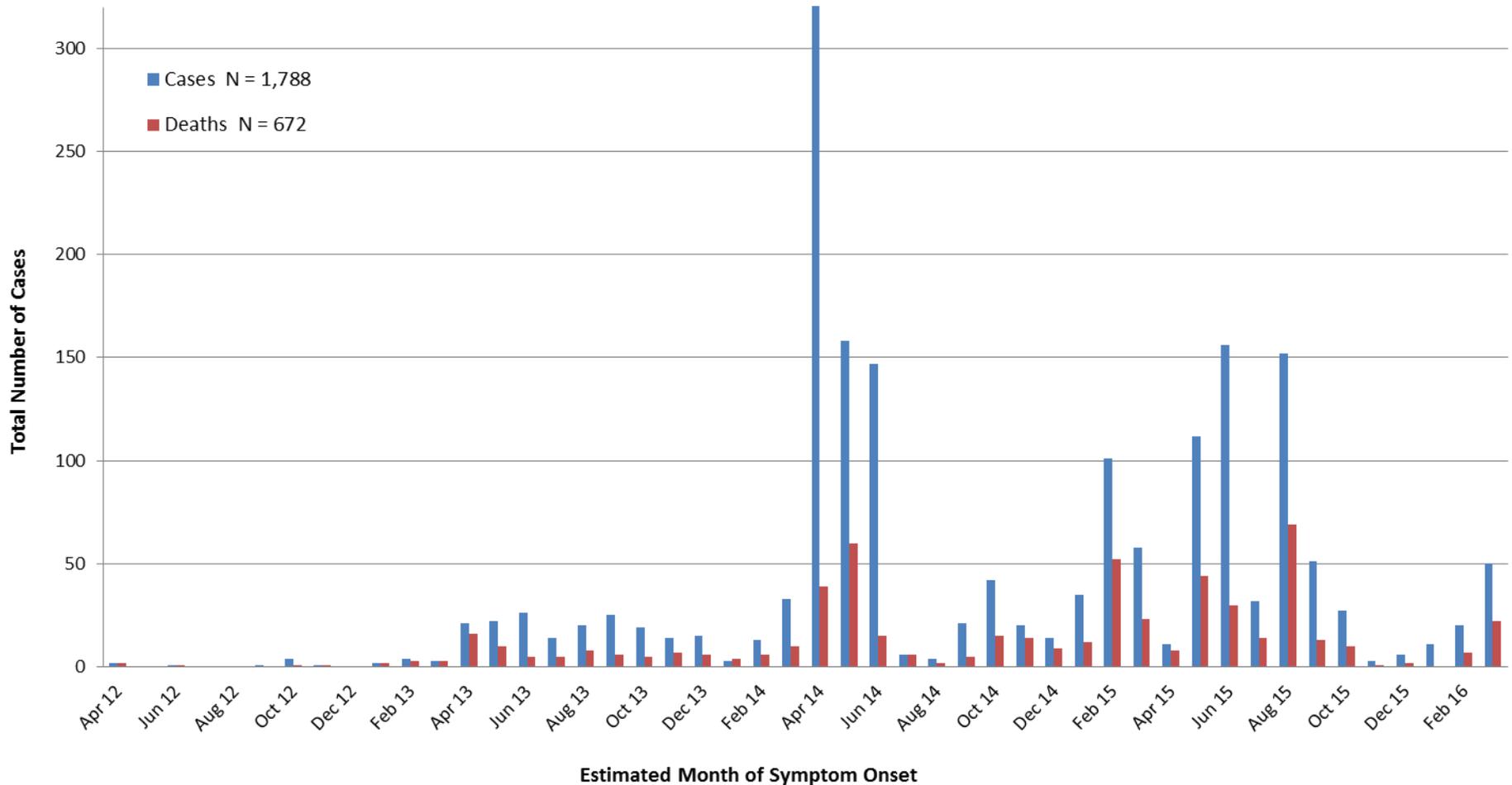
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Global MERS-CoV Surveillance Summary #79

24 MAR 2016



Global MERS-CoV Epidemiological Curve - 24 MAR 2016





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24 MAR 2016



GLOBAL MERS-CoV NUMBERS AT A GLANCE

	Total in 2012	Total in 2013	Total in 2014	Total in 2015	Total in 2016	Cumulative Total (2012-2016)
Cases	9	171	777	750 cases	81 (+30) cases	1,788 (+30) cases
Deaths*	6 deaths	72 deaths	277 deaths	288 deaths	29 (+18) deaths	at least 672 (+18) deaths
Case-Fatality Proportion	66%	42%	36%	39%	36%	38%
Mean Age	45 years	51 years	49 years	55 years	54 years	52 years
Gender Breakdown*	1 female	at least 58 females	at least 175 females	259 females	16 (+10) females	at least 509 (+10) females
# of Healthcare Workers (HCWs) reported*	at least 2 HCWs	at least 31 HCWs	at least 87 HCWs	109 HCWs	11 (+5) HCWs	at least 299 (+5) HCWs

***Disclaimer:** Data reported on MERS-CoV cases are limited and adapted from multiple sources including various Ministries of Health, CDC, and WHO. Consequently, yearly information may not equate to the cumulative totals provided by WHO and CDC.

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