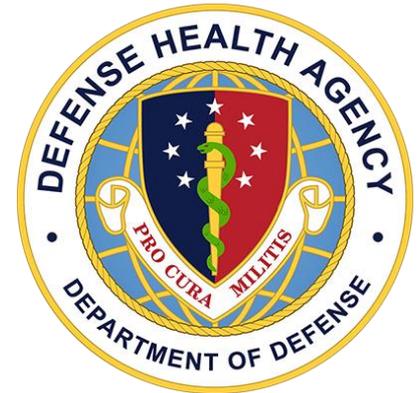


Department of Defense
Armed Forces Health Surveillance Branch
Global MERS-CoV Surveillance Summary
(16 DEC 2015)



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DEPARTMENT OF DEFENSE (AFHSB)

Global MERS-CoV Surveillance Summary #73

16 DEC 2015 (next Summary 13 JAN 2016)



CASE REPORT: As of 16 DEC 2015, 1,702 (+1) cases of Middle East respiratory syndrome coronavirus (MERS-CoV) have been reported including 641 deaths in the Kingdom of Saudi Arabia (KSA), 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. The most recent case was reported in Buraidah, KSA, on 16 DEC.

DOD RELEVANCE: On 13 NOV, GeneOne Life Science, Inovio Pharmaceuticals, and Walter Reed Army Institute of Research (WRAIR) [announced](#) a partnership to create a MERS-CoV vaccine. The Deputy Commander of Operations at WRAIR voiced his support for this partnership as “U.S. military personnel could be at risk in the event of a large scale MERS-CoV outbreak” and noted the clinical trials will be conducted at the WRAIR Clinical Trials Center.

DIAGNOSTICS: Clinical diagnostic testing is available at BAACH, NAMRU-3, LRMC, MAMC, NHRC, USAFSAM, SAMMC, TAMC, WBAMC, WRNMMC, and NIDDL (NMRC). Tripler AMC (TAMC) completed validation of clinical diagnostic testing capability on 24 NOV. 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 16 JUL, AFHSB updated [MERS-CoV testing guidelines](#) for DoD, which include lab contact information, and are aimed at capturing mild cases that may present in healthier populations such as DoD personnel. On 8 DEC, CDC updated its [Interim Patient Under Investigation \(PUI\) Guidance and Case Definitions](#) for MERS-CoV. Notable changes include: removing references to ROK, clarifying that fever may not be present in some patients, and revising the guidance for testing a PUI. AFHSB will update their Detecting and Reporting Guidelines to reflect these changes.

INTERAGENCY/GLOBAL ACTIONS: WHO convened the [Tenth International Health Regulations \(IHR\) Emergency Committee](#) on 2 SEP 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 have a heightened sense of concern as transmission from camels to humans continues in some countries and instances of human-to-human transmission continue to occur in health care settings. The Committee further noted that its advice has not been completely followed as asymptomatic cases that have tested positive for the virus are not always being reported as required. CDC maintains their [Travel Alert Level 2](#) for MERS-CoV in the Arabian Peninsula, which includes specific precautions for the Hajj pilgrimage. CDC is maintaining their travel notice for MERS-CoV in the ROK at a [Travel Watch Level 1](#). The first international workshop on laboratory diagnosis of MERS-CoV was held on 14-16 DEC in Dubai, UAE, at the Central Veterinary Research Laboratory in conjunction with WHO and the MOH of UAE.

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 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 35 spatial clusters predominately involving close contacts. Limited camel-to-human transmission of MERS-CoV has been proven to occur, and [studies suggest](#) camels infected with MERS-CoV may appear asymptomatic but are able to shed large quantities of the virus from the upper respiratory tract. A study published on 10 DEC in [Eurosurveillance](#) found that MERS-CoV is widespread in camels throughout Nigeria, but that gene sequences were genetically distinct from those reported in the Arabian peninsula. The most recent known date of symptom onset is 4 NOV 2015; however 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 493 (+1) cases in females to date. CDC reports 288 (+1) of the total cases have been identified as healthcare workers (HCWs). Of these, 178 were from KSA, 31 from UAE, 7 from Jordan, 2 from Iran, 1 from Tunisia, and 29 from ROK. Characteristics of reported cases are limited, however, CDC reports among 288 HCW cases with available information: 11 died; 55 were asymptomatic; 20 had comorbidities; and 15 presented with only mild symptoms. On 20 OCT, Margaret Chan, director-general of the WHO, [announced](#) that the U.S. and KSA are in discussions to prepare a vaccine for MERS-CoV ahead of the next outbreak.

Text updated from the previous report will be printed in red; items in (+xx) represent the change in number from the previous Summary (2 DEC 2015).

All information has been verified unless noted otherwise. Sources include USFK, ROK MOHW, KCDC, U.S. CDC, WHO, KSA MOH, ECDC, and Vaccine News Daily.

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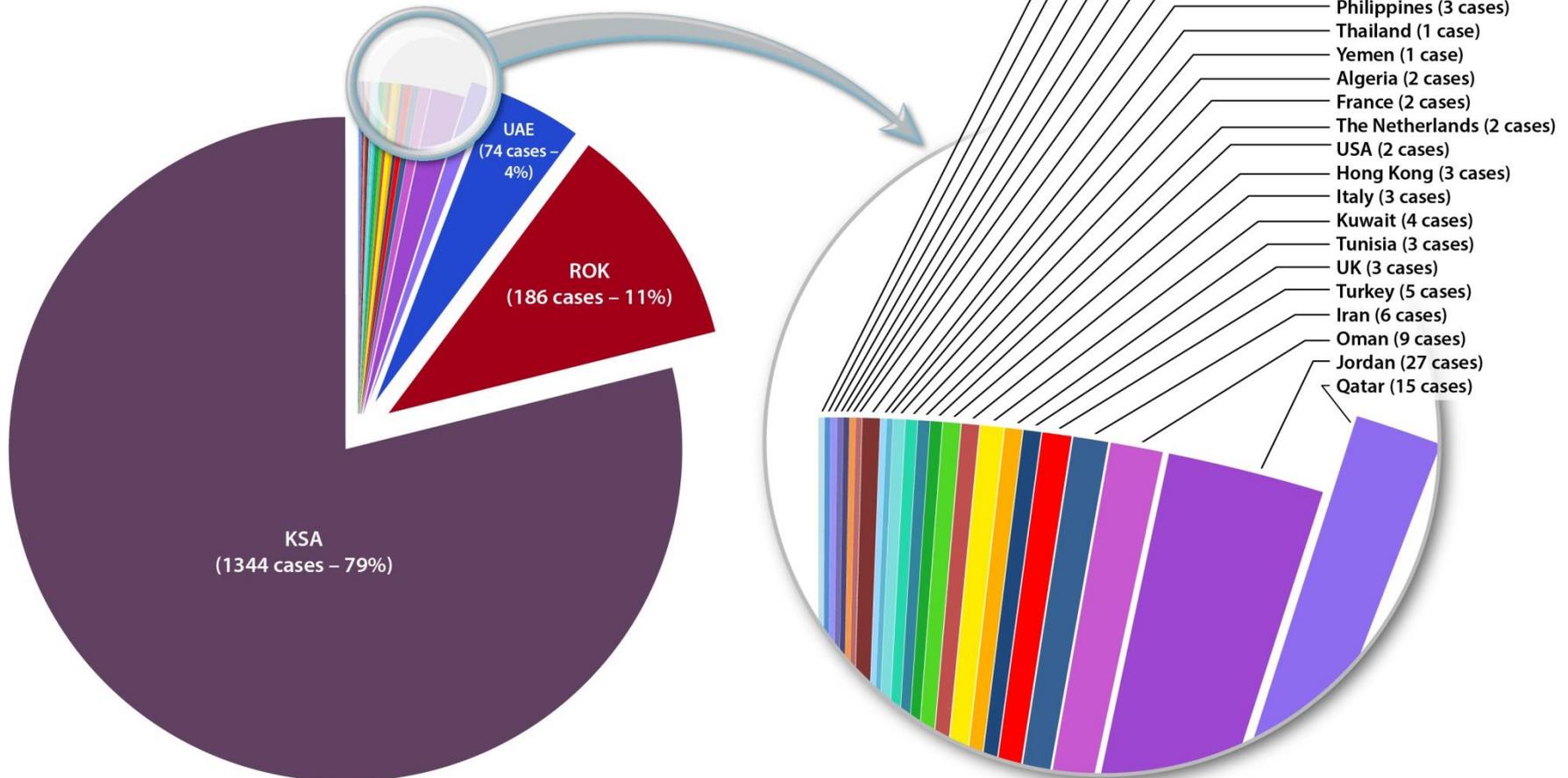
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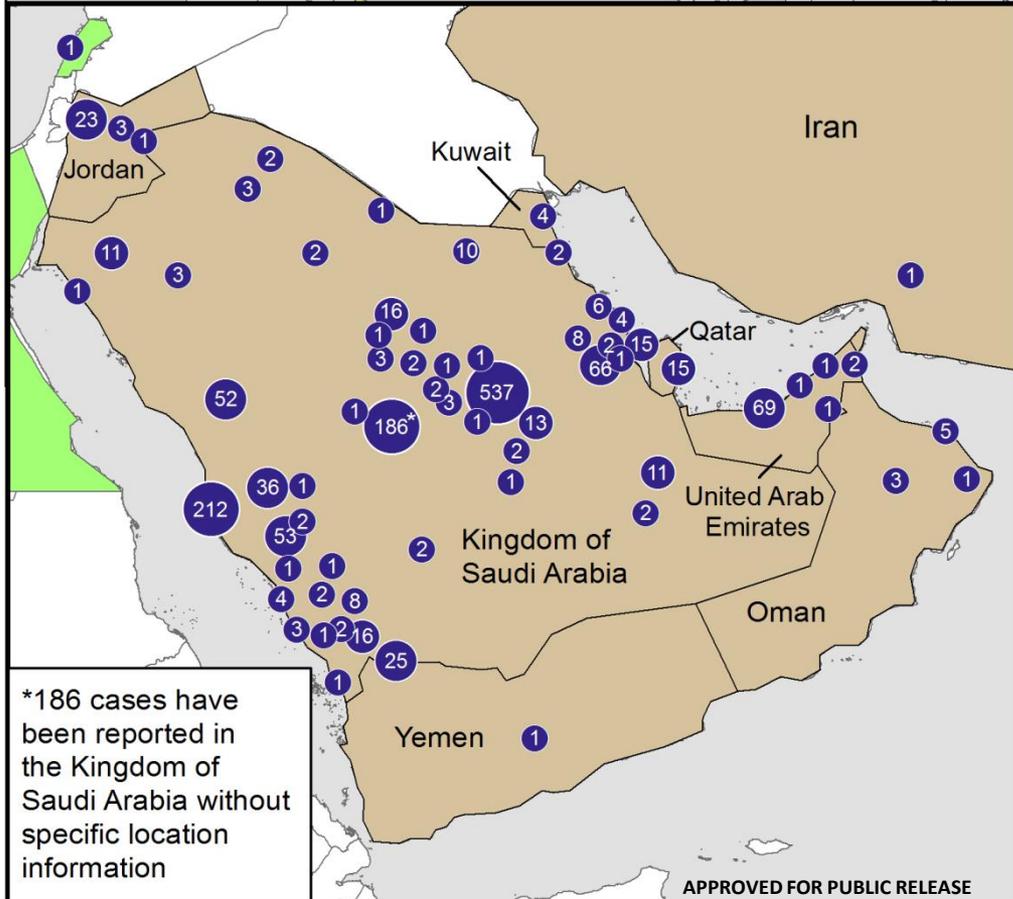
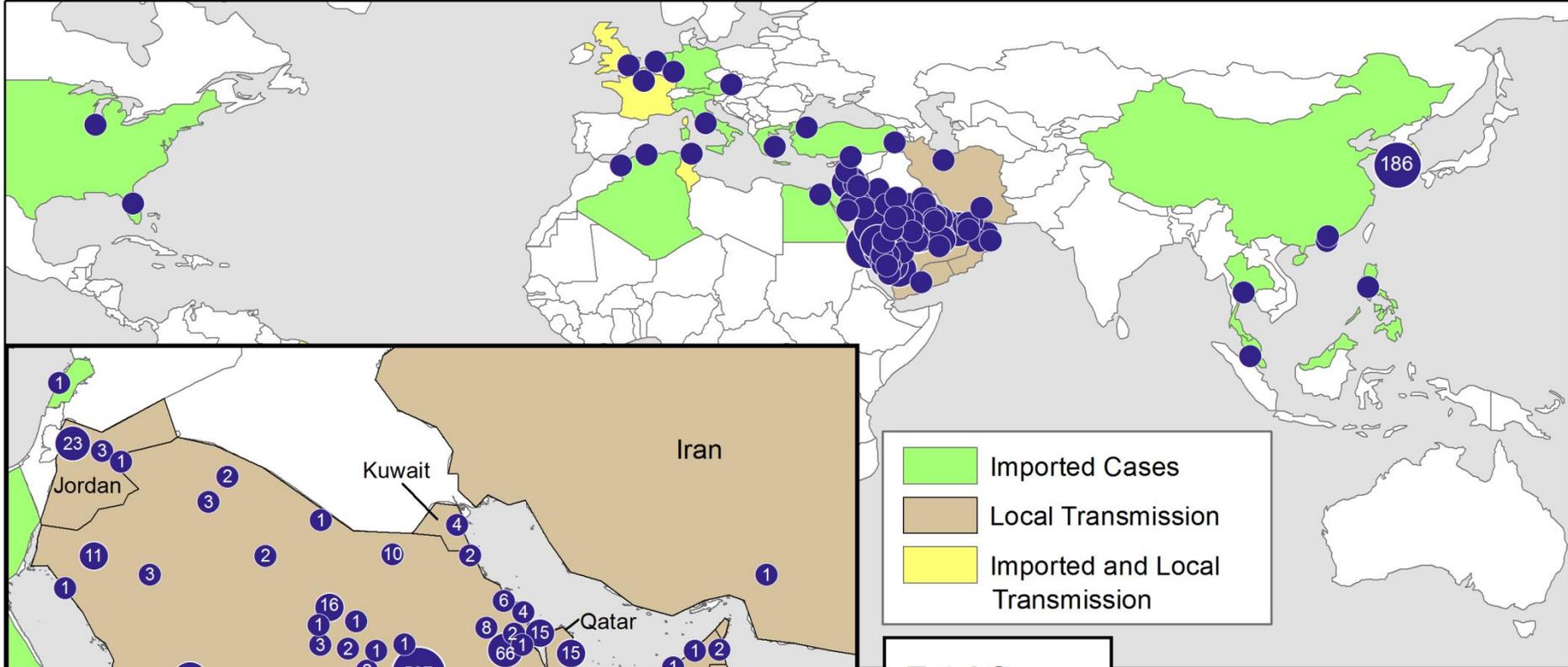
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Global Distribution of Reported MERS-CoV Cases* (SEP 2012 – DEC 2015)



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



Imported Cases
 Local Transmission
 Imported and Local Transmission

Total Cases
N = 1,702
 1 - 10
 11 - 20
 21 - 75
 76 - 150
 151 - 300
 >300

Geographic Distribution of MERS-CoV Cases
1 APR 2012 - 16 DEC 2015



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

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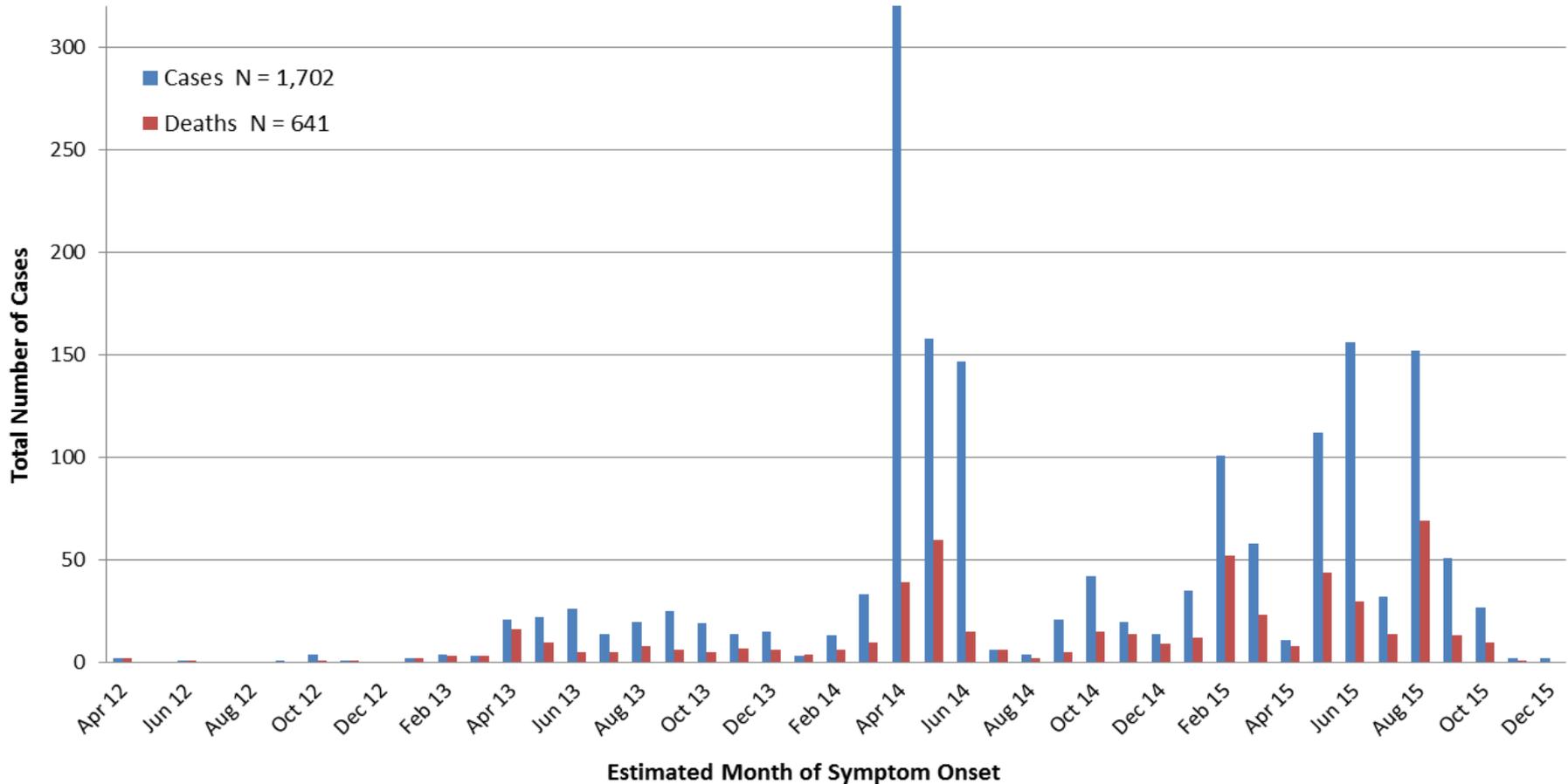
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Global MERS-CoV Epidemiological Curve - 16 DEC 2015





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GLOBAL MERS-CoV NUMBERS AT A GLANCE

	Total in 2012	Total in 2013	Total in 2014	Total in 2015	Cumulative Total (2012-2015)
Cases	9	171	777	745 (+1) cases	1,702 (+1) cases
Deaths*	6 deaths	72 deaths	277 deaths	286 deaths	at least 641 deaths
Case-Fatality Proportion	66%	42%	36%	38%	38%
Mean Age	45 years	51 years	49 years	55 years	52 years
Gender Breakdown*	1 female	at least 58 females	at least 175 females	259 (+1) females	at least 493 (+1) females
# of Healthcare Workers (HCWs) reported*	at least 2 HCWs	at least 31 HCWs	at least 87 HCWs	109 (+1) HCWs	at least 288 (+1) 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.

Legend: Text updated from the previous report will be printed in red; items in (+xx) represent the change in number from the previous Summary (2 DEC 2015).

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MERS-CoV Web Sites

- [WHO](#)
- [WHO Lab Testing Guidance](#)
- [WHO Travel Advice for Pilgrimages](#)
- [WHO 10th IHR Meeting Press Release](#)
- [CDC](#)
- [CDC Travel Advisory for the Arabian Peninsula](#)
- [CDC Travel Advisory for ROK](#)
- [CDC MMWR](#)
- [ECDC](#)
- [AFHSB Detecting and Reporting Guidelines for MERS-CoV](#)

Information and News

- [Surveillance for Coronaviruses in Bats, Lebanon and Egypt, 2013–2015](#) (CDC EID, JAN 2016)
- [Internationaler Workshop über MERS-CoV in Dubai](#) (Expat Aktuell, 15 DEC)
- [Middle East respiratory syndrome coronavirus \(MERS-CoV\) in dromedary camels in Nigeria, 2015](#) (Eurosurveillance, 10 DEC)
- [Interim Patient under Investigation \(PUI\) Guidance and Case Definitions](#) (CDC, 8 DEC)
- [Latest WHO DON on MERS-CoV in the Arabian Peninsula](#) (WHO, 4 DEC)
- [Human Coronavirus 229E Remains Infectious on Common Touch Surface Materials](#) (mBio, 10 NOV)
- [KSA MOH MERS CoV General Public Infographic Video](#) (KSA MOH, 2 JUL)
- [Multifacility Outbreak of Middle East Respiratory Syndrome in Taif, Saudi Arabia](#) (CDC EID, JAN 2016)
- [Persistent environmental contamination and prolonged viral shedding in MERS patients during MERS-CoV outbreak in South Korea](#) (IDSA, 10 OCT)
- [Researchers Create a Mouse that Can Get MERS](#) (MD Magazine, 8 OCT)
- [Differences in the seasonality of MERS-CoV and influenza in the Middle East](#) (IJID, SEP 2015)
- [MERS coronavirus: Candidate vaccine gears up for clinical](#) (EurekAlert, 22 JUN)
- [Presence of Middle East respiratory syndrome coronavirus antibodies in Saudi Arabia: a nationwide, cross-sectional, serological study](#) (Lancet, 5 MAY)
- [WHO DON on first novel coronavirus infection](#) (WHO, 23 SEP 2012)