

Department of Defense Armed Forces Health Surveillance Center Global MERS-CoV Surveillance Summary (29 JUL 2015)



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DEPARTMENT OF DEFENSE (AFHSC)

Global MERS-CoV Surveillance Summary #63

29 JUL 2015 (next Summary 12 AUG 2015)



CASE REPORT: From SEP 2012 to 29 JUL 2015, 1,450 (+9) cases of Middle East respiratory syndrome coronavirus (MERS-CoV) have been reported including 533 (+3) deaths in the Kingdom of Saudi Arabia (KSA) (+9), 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. On 28 JUL, two suspect cases of MERS-CoV reported in the UK tested negative for the virus.

No new cases have been reported in the ROK for 24 consecutive days, leaving the total at 186 confirmed cases, 4 suspect cases, and 36 deaths reported by the MOHW. While media report ROK says the country is free of the disease, WHO officials have yet to officially declare the outbreak over. There were three large cluster events among the cases reported involving Pyeongtaek Saint Mary's Hospital, Samsung Medical Center, and one case that seeded two smaller outbreaks at Dae Cheong Hospital and KonYang University Hospital. Each of these clusters can be explained by a combination of factors such as crowded environments in ERs, close and unprotected contact with asymptomatic cases, and possible fomite transmission. As of 21 JUL, all ROK hospitals closed due to nosocomial transmission were reopened.

DIAGNOSTICS: Clinical diagnostic testing is available at NAMRU-3, LRMC, NHRC, USAFSAM, SAMMC, Tripler AMC (TAMC), WRNMMC, and NIDDL (NMRC). Brian Allgood Army Community Hospital was operational for MERS-CoV testing on 12 JUN. Additional equipment required for full testing capacity was received as of 7 JUL; the validation process is underway. William Beaumont AMC (WBAMC) and Madigan AMC (MAMC) are at full testing capacity as of 7 JUL. Surveillance testing capability is available at NHRC, AFRIMS, NAMRU-2, NAMRU-3, NAMRU-6, and Camp Arifjan. Additionally all 50 state health laboratories and the New York City DHMH have been offered clinical testing kits. On 16 JUL, AFHSC updated [MERS-CoV testing guidelines](#) for DoD components on their website. These guidelines are aimed at capturing mild cases that may present in healthier populations such as DoD personnel.

MEDICAL COUNTERMEASURES IN DEVELOPMENT:

RESEARCH GROUP	TYPE OF COUNTERMEASURE	STAGE OF DEVELOPMENT
ROK MOHW	Plasma treatment	Clinical trials stage
Inovio Pharmaceuticals and GeneOne Life Sciences	DNA-based vaccine	Phase 1 trial announced
Novavax and University of Maryland School of Medicine	Recombinant nanoparticle vaccine	Preclinical Testing phase
U.S. NIH and Fudan University	M336 antibody treatment	Preclinical Testing Phase
Greffex	Treatment	Not yet announced
Abviro	Treatment	Not yet announced
Shanghai Kaibao	Treatment	Not yet announced
Nanovirivide	Treatment	Not yet announced
Purdue University	Enzyme Inhibition Treatment	Not yet announced
Ludwig-Maximilians-Universitaet (LMU) in Munich	Modified Vaccinia virus Ankara (MVA) vaccine	Phase 1 clinical trials
Institute for Research in Biomedicine, Universita della Svizzera italiana	Antibody therapy (LCA60)	Preclinical Testing Phase

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 33 spatial clusters predominately involving close contacts. Limited camel-to-human transmission of MERS-CoV has been proven to occur; and [recent 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. Media outlets, as well as the ECDC and [a review article](#) in the American Journal of Infection Control, indicate "strict infection control measures are essential, given that MERS-CoV survival on hospital surfaces is at least 48 hours and that it has been detected for up to 16 days in respiratory specimens and stool and up to 13 days in urine."

The most recent known date of symptom onset is 5 JUL 2015; however at least 40% of symptomatic cases have been reported without onset date. Due to inconsistencies in reporting, it is difficult to determine a cumulative breakdown by gender, however AFHSC is aware of at least 399 cases in females to date. On 18 JAN, Qatar's SCH reported that [their recent studies have shown](#) people in the 50-69 year age group are more vulnerable to the MERS-CoV virus. CDC reports 241 of the total cases have been identified as healthcare workers (HCWs). Of these, 134 were from KSA, 31 from UAE, 5 from Jordan, 2 from Iran, 1 from Tunisia, and 29 from ROK. Characteristics of reported cases are limited, however, CDC reports among the 241 HCW cases: 11 died; 55 were asymptomatic; 20 had comorbidities; and 15 presented with only mild symptoms.

On 21 JUL, the ECDC released an [updated risk assessment for MERS-CoV](#) which notes all cases reported outside the Arabian Peninsula either had recent travel to the Arabian Peninsula or could be linked to a chain of transmission originating from a case with a travel history to the Arabian Peninsula. [A recently published study by the CDC demonstrated an association between viral load of MERS-CoV and the severity of disease outcome, and showed "the presence of underlying illness elevated the odds of severe outcome or death \[from MERS-CoV\] by 7-8 fold."](#)

INTERAGENCY/GLOBAL ACTIONS: On 19 JUN, WHO noted that "it is not always possible to identify patients with MERS-CoV early, so it is necessary for all health care facilities to have standard infection prevention and control practices in place" to prevent transmission. WHO [reiterated](#) on 3 FEB that people with diabetes, renal failure, or chronic lung disease, and immunocompromised persons are considered to be at high risk of severe disease from MERS-CoV infection. WHO convened the [Ninth International Health Regulations \(IHR\) Emergency Committee](#) on 16 JUN to discuss MERS-CoV and concluded that the conditions for a Public Health Emergency of International Concern (PHEIC) have not yet been met. The Committee noted the findings of the recent ROK-WHO MERS Joint Mission which stated the main factors contributing to the spread of MERS-CoV in ROK are:

- Lack of awareness among HCWs and the public about MERS-CoV
- Suboptimal infection prevention and control measures in hospitals
- Close and prolonged contact of infected MERS-CoV patients in hospitals
- The practice of seeking care at multiple hospitals ("doctor shopping")
- The custom of many visitors or family members staying with infected patients in hospital rooms.

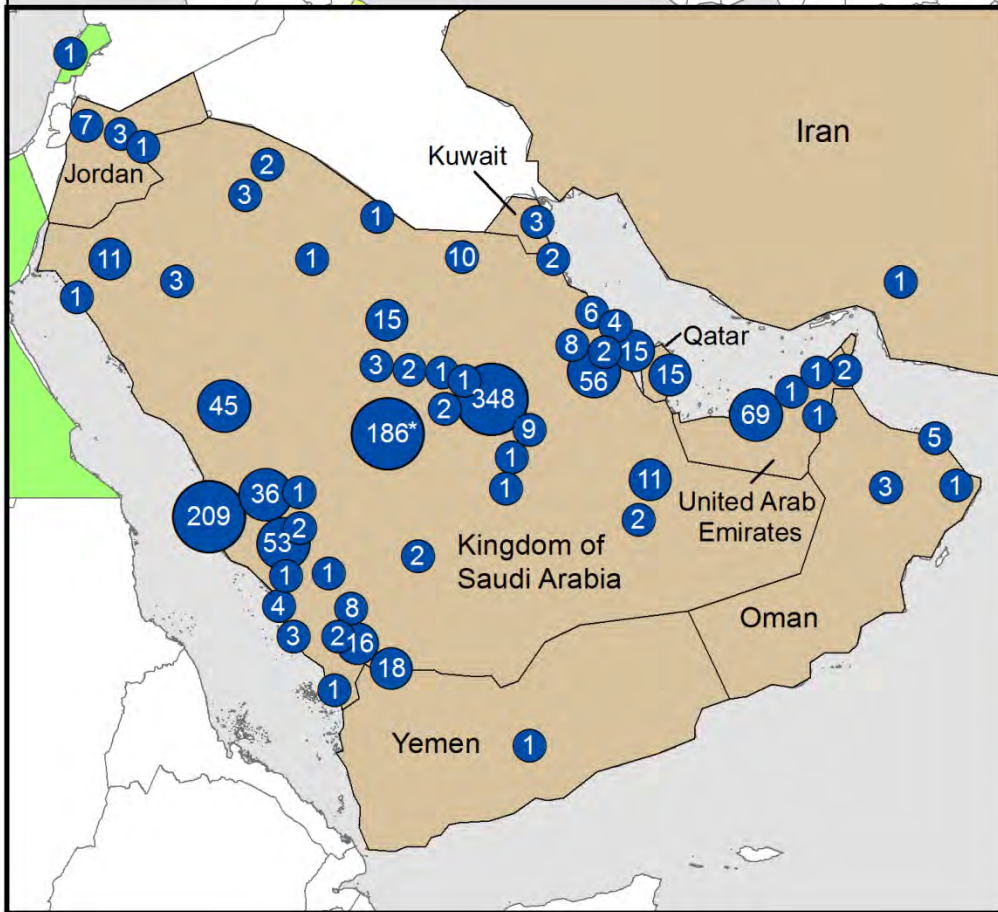
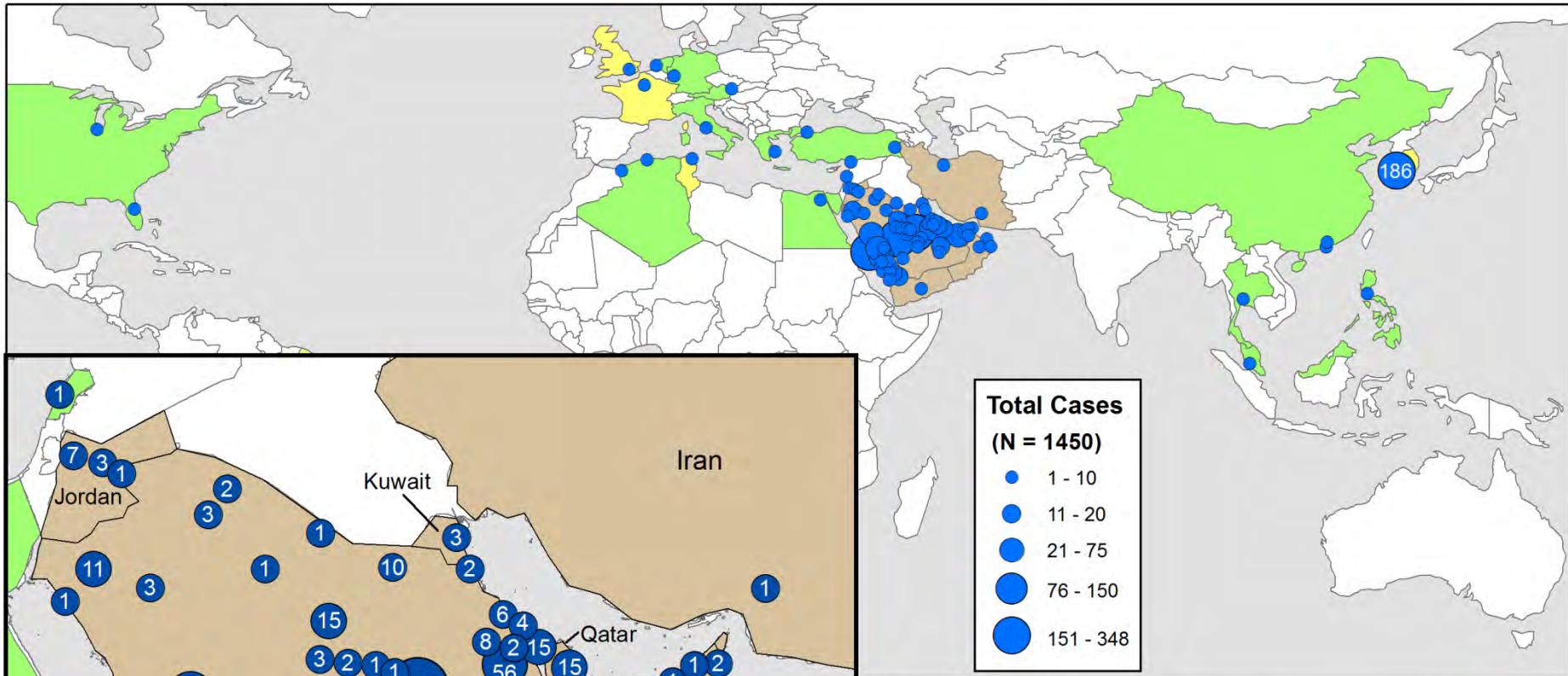
CDC has elevated their travel notice for MERS-CoV in the ROK to a [Travel Watch Level 1](#). CDC is maintaining their [Travel Alert Level 2](#) for MERS-CoV in the Arabian Peninsula, which includes specific precautions for the upcoming Hajj (approximately 20 - 25 SEP 2015) Pilgrimage. On 11 JUN, CDC released a [Health Advisory](#) to provide updated guidance in the evaluation of patients for MERS-CoV infection. These have been revised to include individuals with a travel history to a healthcare setting in ROK. On 9 JUN, the U.S. Embassy in ROK posted an [updated U.S. Citizen Security Message regarding MERS-CoV](#) for AMCITs in ROK.

Text updated from the previous report will be printed in red; items in (+xx) represent the change in number from the previous Summary (22 JUL 2015).

All information has been verified unless noted otherwise. Sources include the USFK, ROK MOHW, KCDC, U.S. Embassy in ROK, U.S. CDC, WHO, KSA MOH, ECDC, and SCH Qatar.

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Geographic Distribution of MERS-CoV Cases

1 APR 2012 - 29 JUL 2015



- Imported Cases
- Imported Cases with Local Transmission
- Local Transmission

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



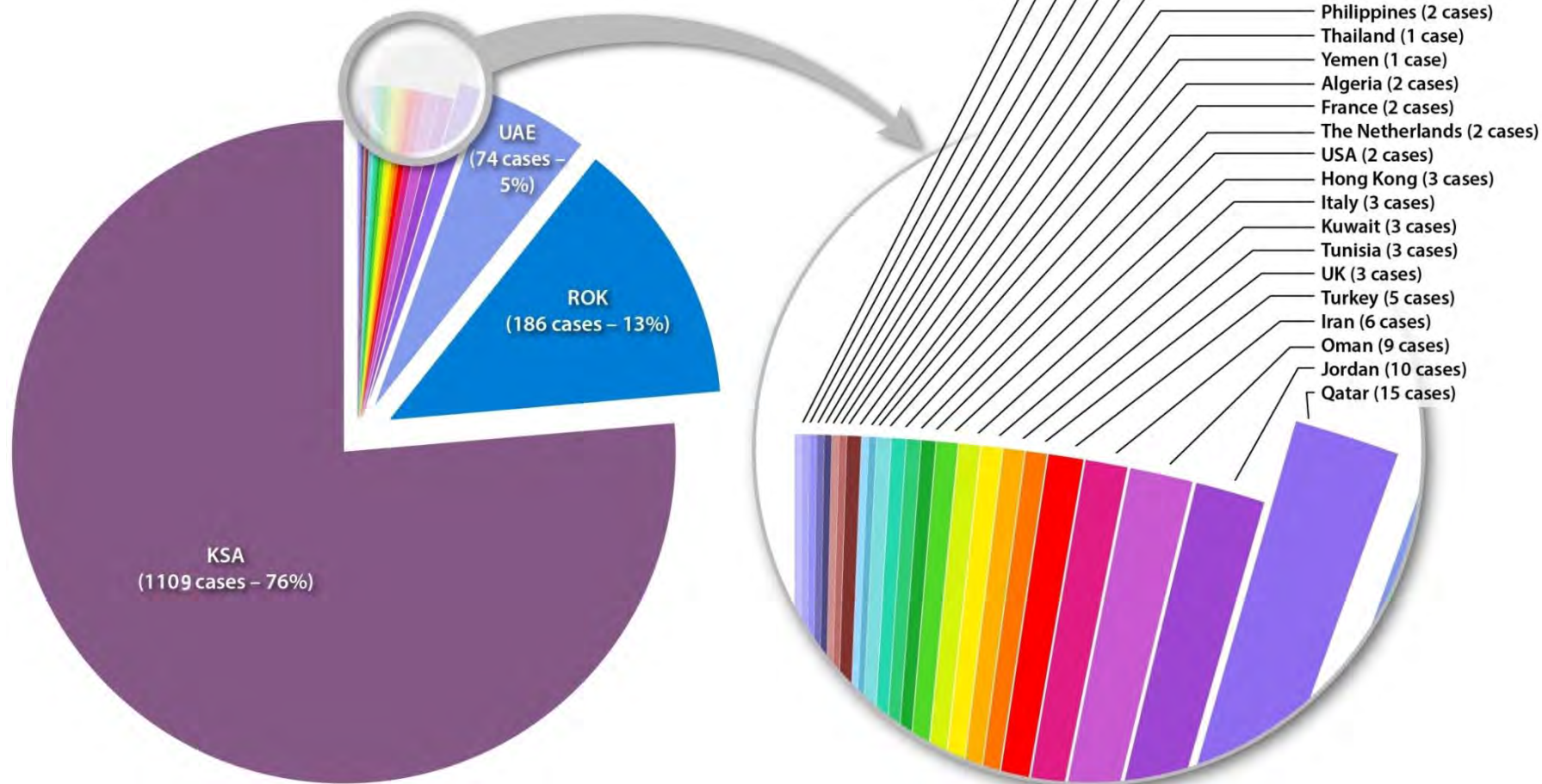
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Global Distribution of Reported MERS-CoV Cases* (SEP 2012 – JUL 2015)



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

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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)
Confirmed Cases	9	171	777	493 cases (+9)	1450 cases (+9)
Confirmed Deaths*	6 deaths	72 deaths	277 deaths	178 deaths (+3)	at least 533 deaths (+3)
Case-Fatality Proportion	66%	42%	36%	36%	37%
Mean Age	45 years	51 years	49 years	56 years	51 years
Gender Breakdown*	1 female	at least 58 females	at least 175 females	155 females	at least 399 females
# of Healthcare Workers (HCWs) reported*	at least 2 HCWs	at least 31 HCWs	at least 87 HCWs	62 HCWs	at least 241 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 (22 JUL 2015).

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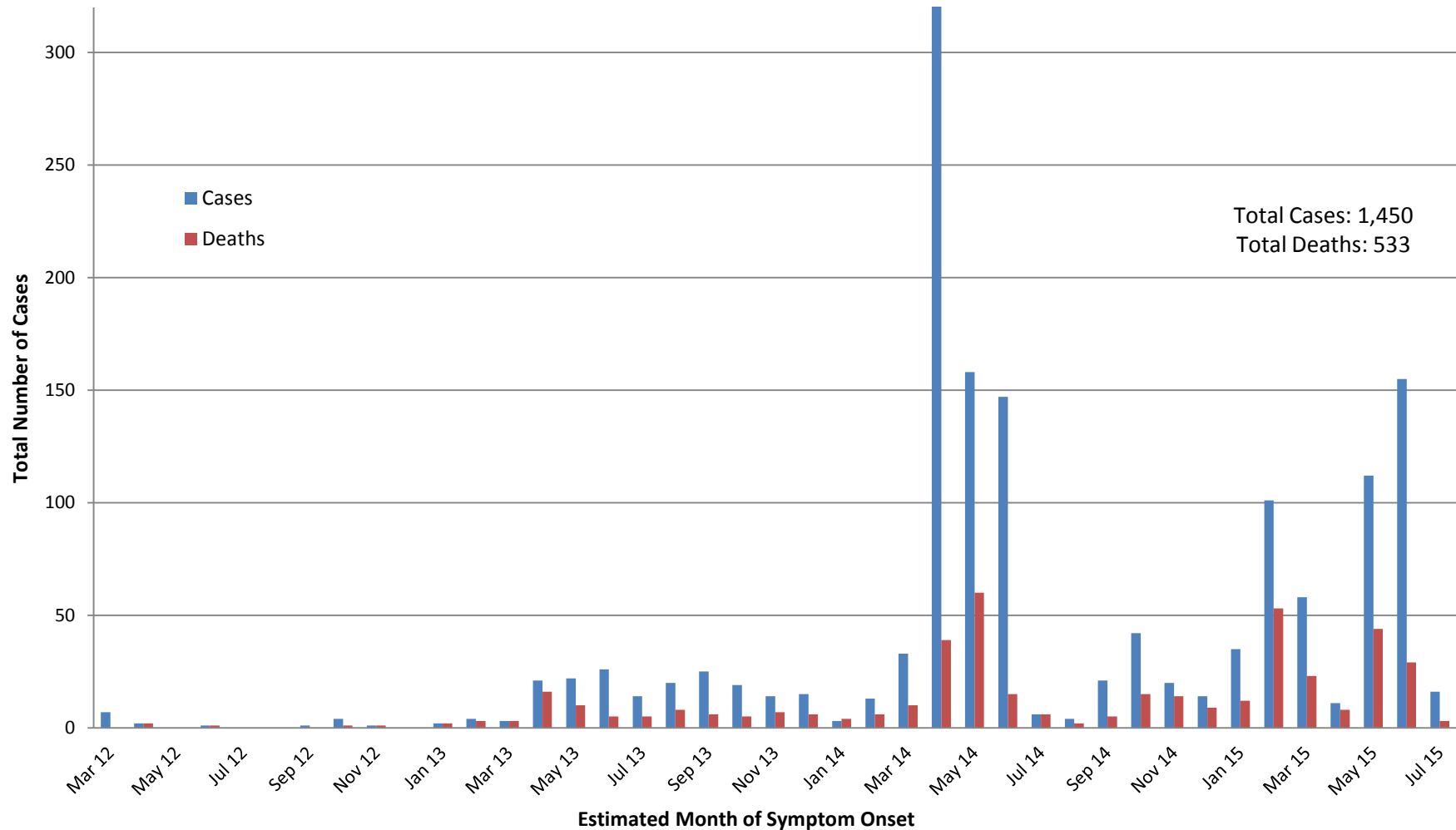
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Global MERS-CoV Epidemiological Curve - 29 JUL 2015





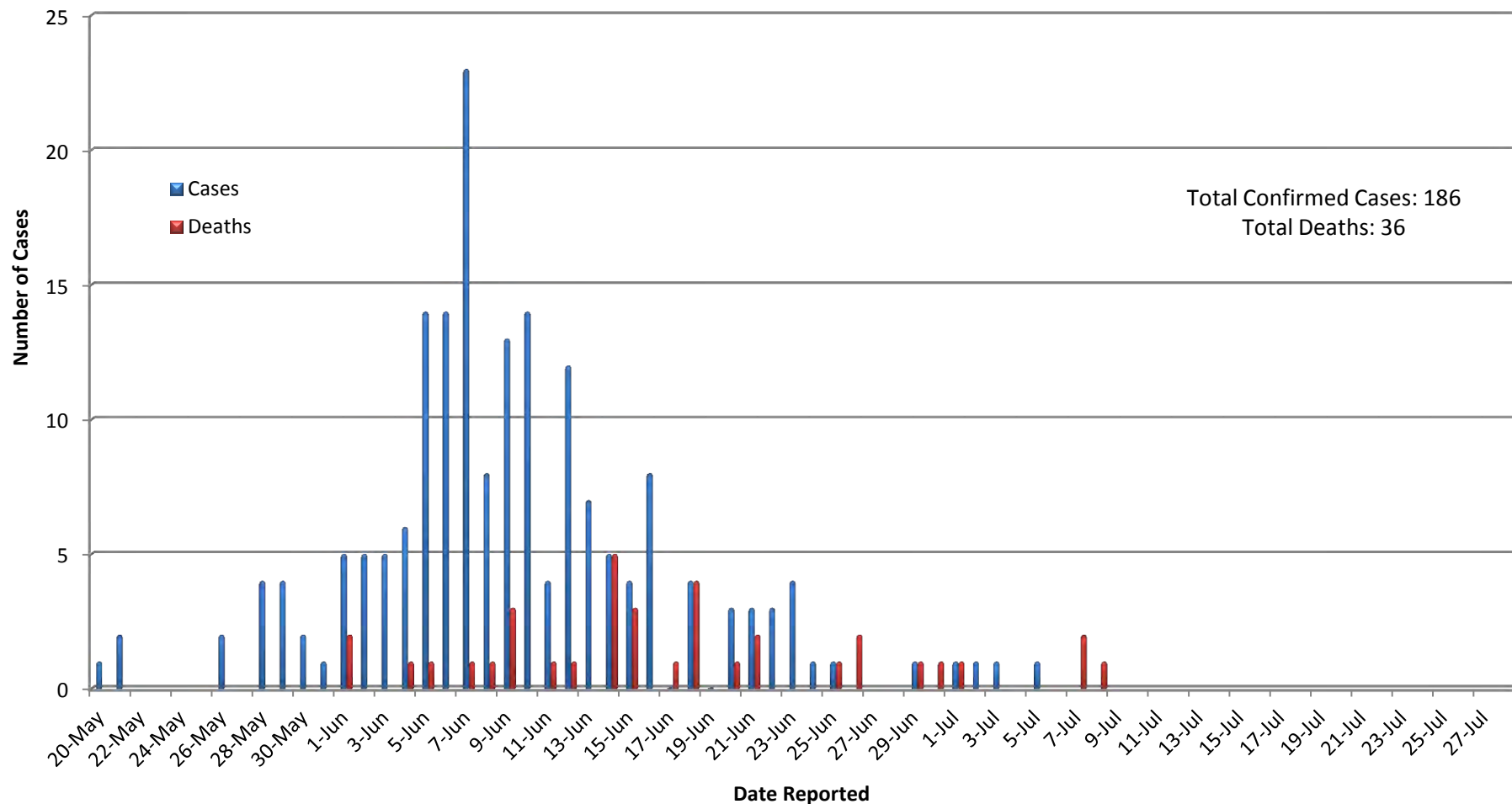
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ROK MERS-CoV Epidemiological Curve - as of 29 JUL 2015





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MERS-CoV Web Sites

- [WHO](#)
- [WHO Lab Testing Guidance](#)
- [WHO Travel Advice for Pilgrimages](#)
- [WHO 9th IHR Meeting Press Release](#)
- [CDC](#)
- [CDC Travel Advisory for the Arabian Peninsula](#)
- [CDC Travel Advisory for ROK](#)
- [CDC MMWR](#)
- [ECDC](#)
- [AFHSC Detecting and Reporting Guidelines for MERS-CoV](#)

Information and News

- [Two patients in Britain test negative for MERS](#) (Yahoo News, 28 JUL)
- [South Korea declares country effectively out of MERS danger](#) (Reuters, 28 JUL)
- [Potent Mers-CoV antibody discovered neutralises multiple strains of virus](#) (International Business Times, 27 JUL)
- [Association of Higher MERS-CoV Virus Load with Severe Disease and Death, Saudi Arabia, 2014](#) (CDC EIDJ, 24 JUL)
- [Latest WHO DON on MERS-CoV in the Arabian Peninsula](#) (WHO, 24 JUL)
- [South Korea tourism struggles to recover from MERS crisis](#) (Good Morning America, 22 JUL)
- [ECDC updates its rapid risk assessment on MERS-CoV](#) (ECDC, 21 JUL)
- [Latest WHO DON on MERS-CoV in ROK](#) (WHO, 21 JUL)
- [Middle East Respiratory Syndrome](#) (American Journal of Respiratory and Critical Care Medicine, 29 JUN)
- [Experts cover MERS outbreak in American Journal of Respiratory and Critical Care Medicine](#) (EurekAlert, 29 JUN)
- [South Korean Retailers Pinched by MERS](#) (NYT, 22 JUN)
- [MERS coronavirus: Candidate vaccine gears up for clinical](#) (EurekAlert, 22 JUN)
- [WHO MERS-CoV Risk Assessment and Line List of ROK Cases](#) (WHO, JUN 2015)
- [Acute Respiratory Infections in Travelers Returning from MERS-CoV-Affected Areas](#) (CDC EIDJ, JUN 2015)
- [South Korea begins plasma treatment trial for Mers](#) (BBC, 16 JUN)
- [China, US develop new MERS treatment](#) (ChinaDaily, 15 JUN)
- [MERS-CoV deaths rise with few drugs in pipeline](#) (Pharmaceutical Market Live, 15 JUN)
- [CDC EID Journal Articles on MERS-CoV](#) (CDC, 10 JUN)
- [Security Message for U.S. Citizens: Seoul \(South Korea\) Updated Information Regarding MERS](#) (OSAC, 9 JUN)
- [WHO DON on first novel coronavirus infection](#) (WHO, 23 SEP 2012)