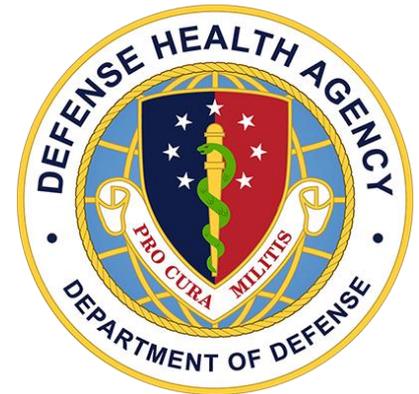


Department of Defense  
Armed Forces Health Surveillance Branch  
Global MERS-CoV Surveillance Summary  
(16 NOV 2016)



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# DEPARTMENT OF DEFENSE (AFHSB)

## Global MERS-CoV Surveillance Summary #96

### 16 NOV 2016 (next Summary 30 NOV)



**CASE REPORT:** As of 16 NOV 2016, 1,911 (+8) cases of Middle East respiratory syndrome coronavirus (MERS-CoV) have been reported, including at least 589 (+2) deaths (CDC reports at least 672 (+1) deaths as of 15 NOV) in the Kingdom of Saudi Arabia (KSA) (+8), 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. All eight of the new cases were classified as primary, with two of the cases reported in Buraidah, two in Kharj, and one case each in Bahrah, Najran, Tabuk, and Afif. 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 24 OCT 2016. The KSA Ministry of Health (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 592 (+1) cases in females to date. CDC reports 307 of the total cases have been identified as healthcare workers (HCWs).

Limited human-to-human transmission has been identified in at least 54 (+1) spatial clusters as of 16 NOV, predominately involving close contacts. The most recent cluster was traced to the index case from a previously reported nosocomial outbreak in Hufoof, a 73-year-old man who passed away on 18 OCT. In addition to the three individuals that the index case infected at the hospital, he also infected an ambulance driver who transported him to the hospital on 13 OCT prior to his diagnosis and isolation.

**INTERAGENCY/GLOBAL ACTIONS:** From 30 OCT through 3 NOV, FAO's Emergency Centre for Transboundary Animal Disease (ECTAD) hosted a training course in Egypt for laboratory staff from the Animal Health Research Institute (AHRI), National Research Center (NRC), Egyptian Ministry of Health, and other relevant institutions on the standardized protocol for MERS-CoV testing. A key component of the training was a field visit to one of the largest camel markets in Egypt (Barkash market) where camel samples were obtained and tested by participants. In its 26 OCT [situation update](#) on MERS-CoV, FAO reported it is continuing to conduct cross-sectional surveillance of dromedary camels and other livestock species in Kenya with support from USAID. In Ethiopia, a second round of camel sample collection has begun in the Somali region through a new partnership between FAO and the National Animal Health Diagnostic and Investigation Centre (NAHIDC). Sampling from camel holding grounds (i.e., for export) and other areas of the country was set to begin in early NOV.

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.

**DIAGNOSTICS/MEDICAL COUNTERMEASURES:** On 9 OCT, the Qatar Ministry of Public Health (MoPH) announced that a MERS-CoV vaccine "may be available by the end of 2017" and that other "scientific treatment options" could be available "sometime in 2017."

(+xx) represents the change in number from the previous AFHSB Summary of 2 NOV 2016.

All information has been verified unless noted otherwise.

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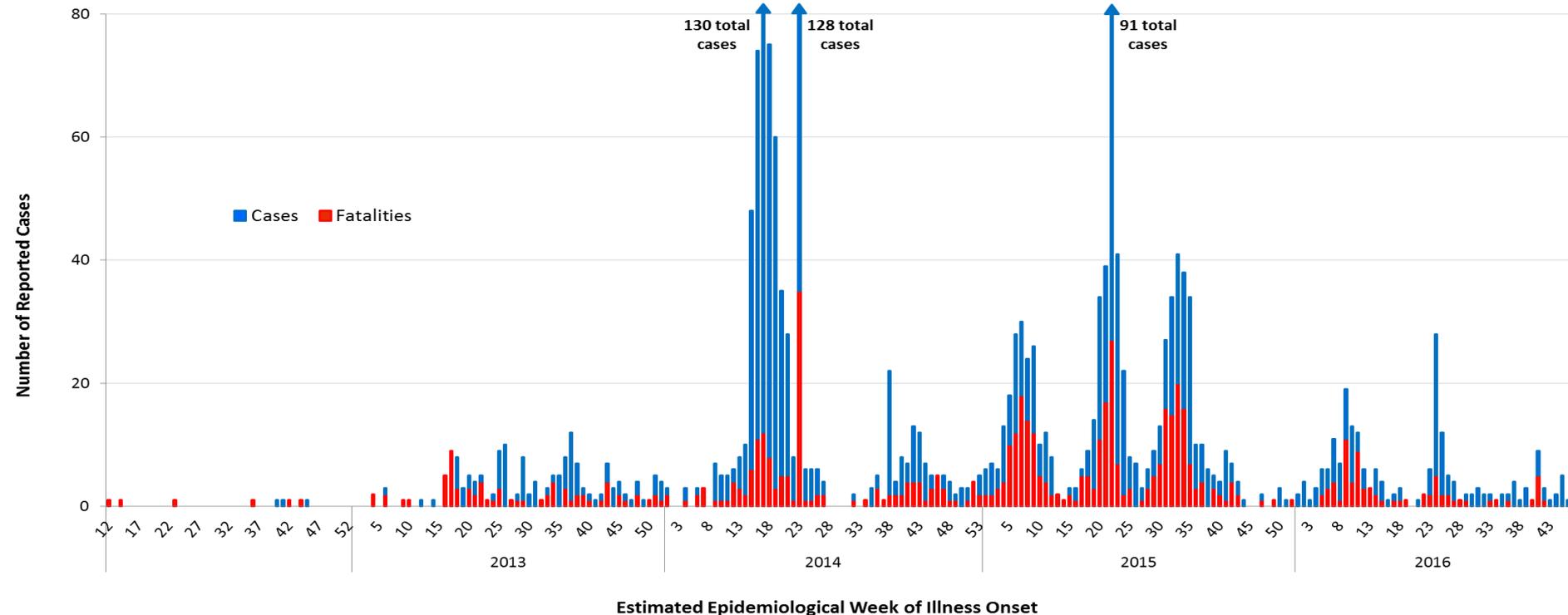
## Global MERS-CoV Surveillance Summary #96

### 16 NOV 2016



**RELEVANT STUDIES:** A recent study published in Scientific Reports found that the mean MERS-CoV incubation period was approximately two days longer during the ROK outbreaks (6.9 days) than for cases reported in KSA (5 days). This could be attributed to differences in the ascertainment or reporting of exposure dates and illness onset dates or differing transmission dynamics. Incubation period might have been prolonged in ROK compared to KSA because there were only secondary cases and longer transmission chains among different hospitals, while KSA's outbreaks often include multiple separate animal-to-human, indirect infections, or secondary cases at the same hospital. Additionally, direct human-to-human transmission, as identified in the nosocomial outbreaks in KSA, could be related to a "higher infecting dose and higher virulence of the strain that could lead to a shorter incubation period." 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.

**Global MERS-CoV Epidemiological Curve by Illness Onset**





# DEPARTMENT OF DEFENSE (AFHSB)

## Global MERS-CoV Surveillance Summary #96

16 NOV 2016



### MERS-CoV Diagnostics and Medical Countermeasures at DoD Laboratories



- AFRIMS**  
Armed Forces Research Institute of Medical Sciences
- BAACH**  
Brian Allgood Army Community Hospital
- BAMC**  
Brooke Army Medical Center
- Camp Arifjan**  
Camp Arifjan
- LRMC**  
Landstuhl Regional Medical Center
- MAMC**  
Madigan Army Medical Center
- NAMRU-2**  
U.S. Naval Medical Research Unit No. 2
- NAMRU-3**  
U.S. Naval Medical Research Unit No. 3
- NAMRU-6**  
U.S. Naval Medical Research Unit No. 6
- NHRC**  
Naval Health Research Center
- NIDDL**  
Naval Infectious Diseases Diagnostic Laboratory
- TAMC**  
Tripler Army Medical Center
- USAFSAM**  
U.S. Air Force School of Aerospace Medicine
- USAMRU-K**  
U.S. Army Medical Research Unit - Kenya
- WBAMC**  
William Beaumont Army Medical Center
- WRNMMC**  
Walter Reed National Military Medical Center

**Testing Capability**

- Clinical Diagnostic Testing
- Surveillance Testing
- Clinical Diagnostic Testing and Surveillance Testing



**RETURN TO TOP**

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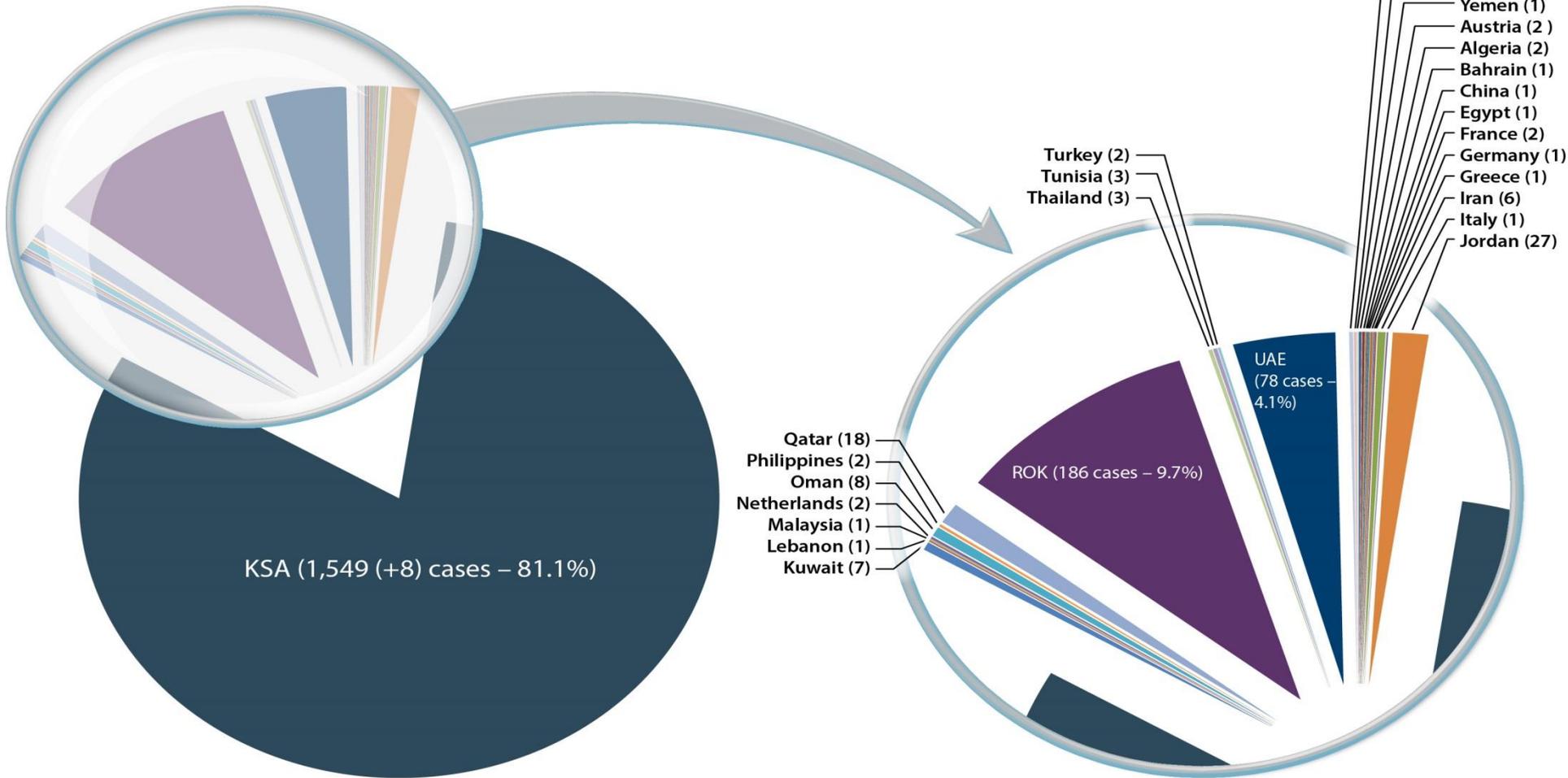
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## Global MERS-CoV Surveillance Summary #96

16 NOV 2016



### Global Distribution of Reported MERS-CoV Cases\* (SEP 2012–NOV 2016)

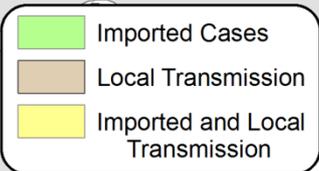
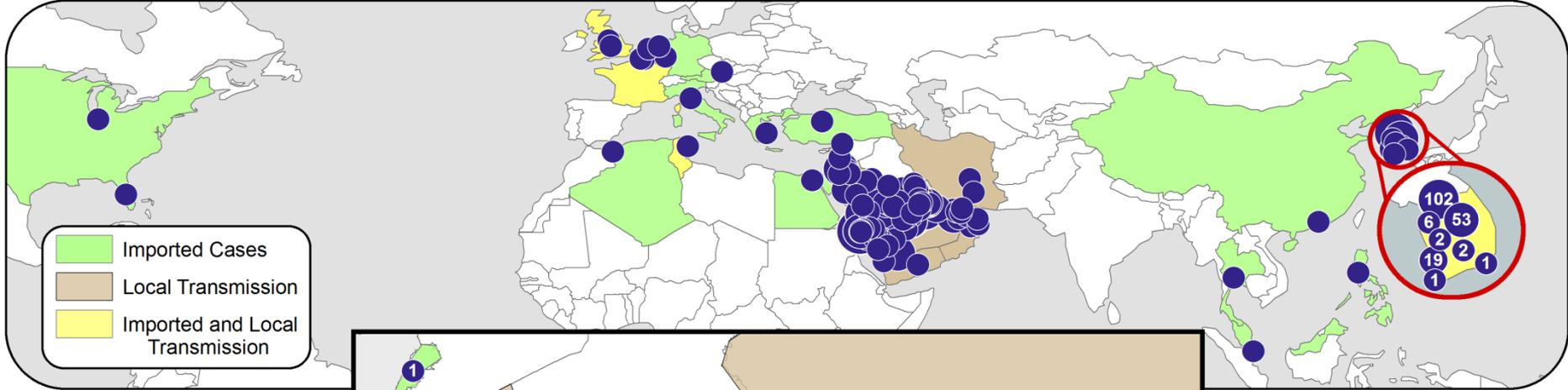


\*Data includes confirmed, suspect and probable cases reported by WHO, CDC, and various country MOHs

[RETURN TO TOP](#)

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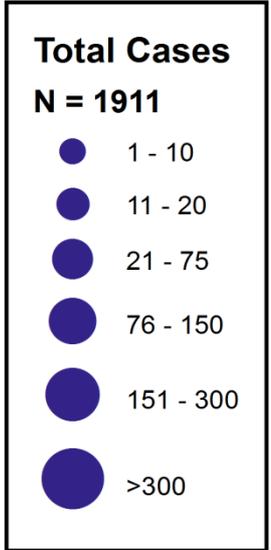
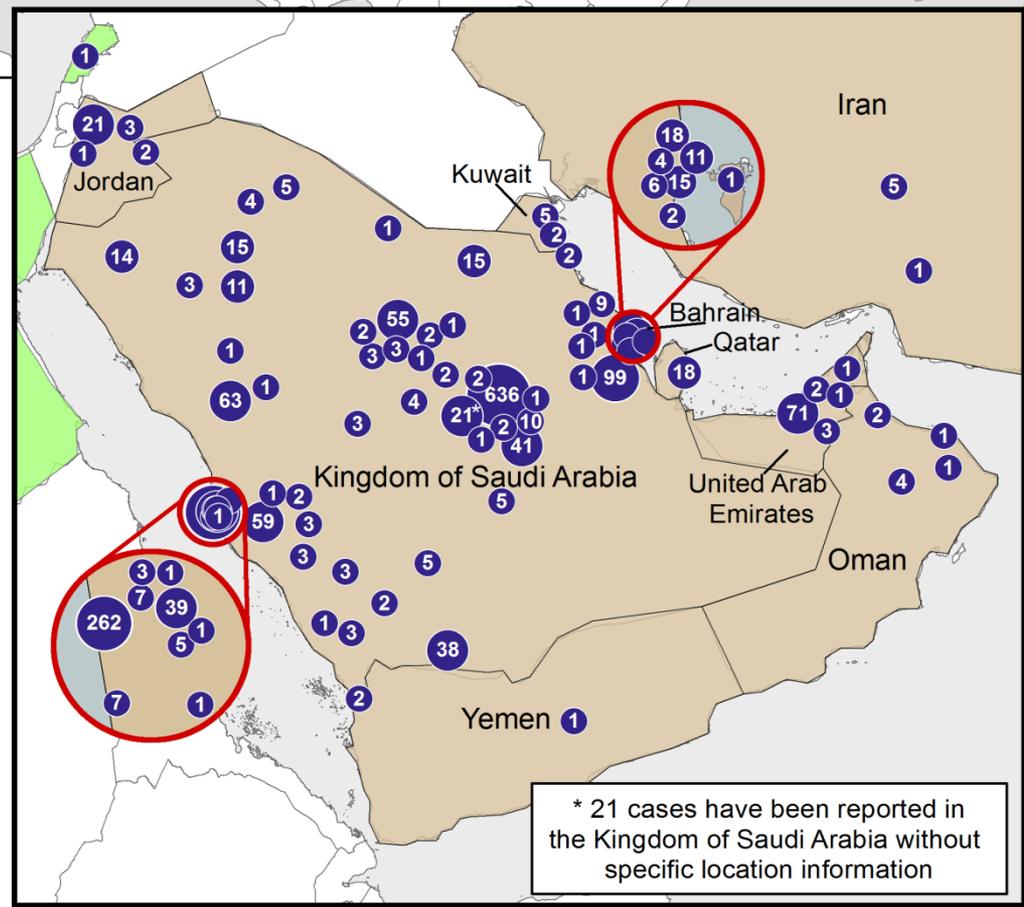
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**Geographic Distribution of MERS-CoV Cases**  
1 APR 2012 - 16 NOV 2016



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

RETURN TO TOP

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