



**UPDATED RAPID RISK ASSESSMENT**

# Severe respiratory disease associated with Middle East respiratory syndrome coronavirus (MERS-CoV)

Thirteenth update, 15 January 2015

## Main conclusions and recommendations

Since April 2012 and as of 11 January 2015, 972 cases of Middle East respiratory syndrome coronavirus (MERS-CoV) have been reported by local health authorities worldwide, including 394 deaths.

The incidence of MERS-CoV cases shows a decrease after the surge in October 2014, and the majority of MERS-CoV cases are still reported from the Arabian Peninsula, mainly from Saudi Arabia.

The source of MERS-CoV infection and the mode of transmission have still not been confirmed.

Taking into account the latest developments with respect to the Middle East respiratory syndrome coronavirus (MERS-CoV), ECDC's conclusion in this latest update continues to be that the assessed risk to the EU posed by the outbreak of MERS-CoV is low.

There is a continued risk of cases presenting in Europe following exposure in the Middle East and international surveillance for MERS-CoV cases remains essential. Although importation of MERS-CoV cases to the EU remains possible, the risk of sustained human-to-human transmission in Europe remains very low.

Sensitisation of healthcare staff to MERS-CoV is prudent, not only for timely detection purposes, but also in order to ensure rapid implementation of infection control measures.

## Source and date of request

ECDC internal decision, 7 January 2015.

## Public health issue

Assess the risk associated with MERS-CoV, taking into account the latest developments.

## Consulted experts

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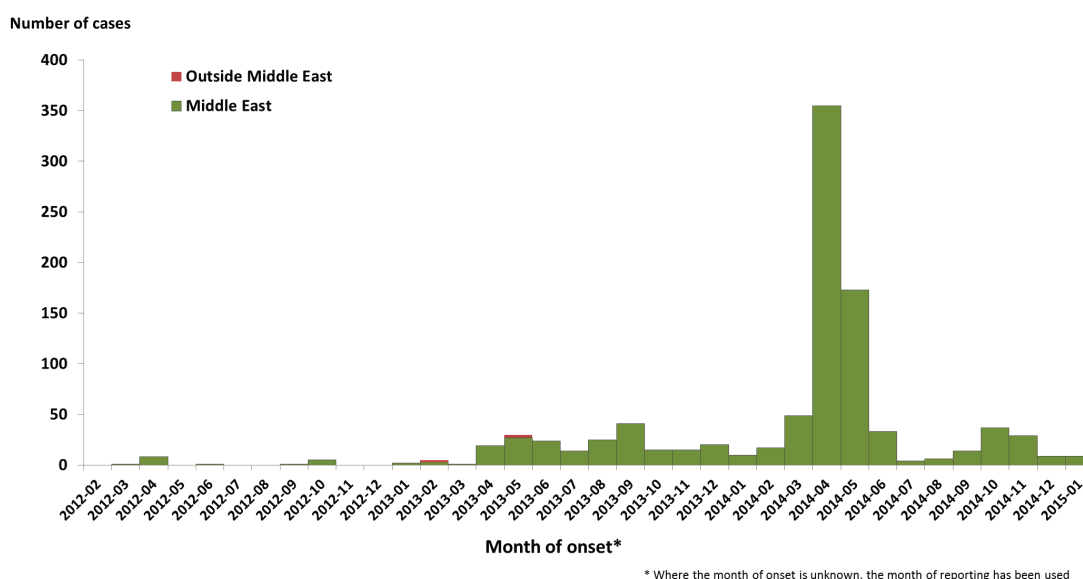
External contributors: The World Health Organization (WHO) was consulted for this document; however the views in this document do not necessarily represent the views of WHO.

## Event background information

### Worldwide situation

Since April 2012 and as of 13 January 2015, 972 cases of MERS-CoV have been reported by health authorities worldwide, including 394 deaths (Figure 1).

**Figure 1. Distribution of confirmed cases of MERS-CoV by month and reporting area, March 2012–13 January 2015 (n=972)**



### Geographical distribution

Most of the cases have occurred in the Middle East (Saudi Arabia, United Arab Emirates, Qatar, Jordan, Oman, Kuwait, Egypt, Yemen, Lebanon and Iran) (Table1).

**Table 1. Number of confirmed cases and deaths, by country of reporting, March 2012–13 January 2015**

Reporting country	Cases	Deaths	Date of onset/reporting for most recent cases
<b>Middle East</b>			
Saudi Arabia	833	358	09/01/2015
United Arab Emirates	73	9	05/07/2014
Qatar	9	4	14/10/2014
Jordan	19	6	25/12/2014
Oman	4	3	11/01/2015
Kuwait	3	1	13/02/2014
Egypt	1	0	22/04/2014
Yemen	1	1	17/03/2014
Lebanon	1	0	22/04/2014
Iran	5	2	25/06/2014
<b>Europe</b>			
Turkey	1	1	25/09/2014
Austria	1	0	24/09/2014
United Kingdom	4	3	06/02/2013
Germany	2	1	08/03/2013
France	2	1	08/05/2013
Italy	1	0	27/05/2013
Greece	1	1	08/04/2014
Netherlands	2	0	05/05/2014
<b>Rest of the world</b>			
Tunisia	3	1	16/05/2013
Algeria	2	1	23/05/2014
Malaysia	1	1	09/04/2014
Philippines	1	0	04/04/2014
United States of America	2	0	01/05/2014
<b>Total</b>	<b>972</b>	<b>394</b>	

All cases reported from outside the Middle East have had a recent travel history to the Middle East or contact with a case that had travelled from the Middle East (Figure 2)

**Figure 2. Geographical distribution of confirmed MERS-CoV cases and place of probable infection, worldwide, as of 13 January 2015 (n=972)**



Of the 760 cases where age and sex is known, 47% (n=360) have been males above the age of 40 years (Figure 3).

**Figure 3. Age and gender distribution among confirmed cases of MERS-CoV (n=760)**

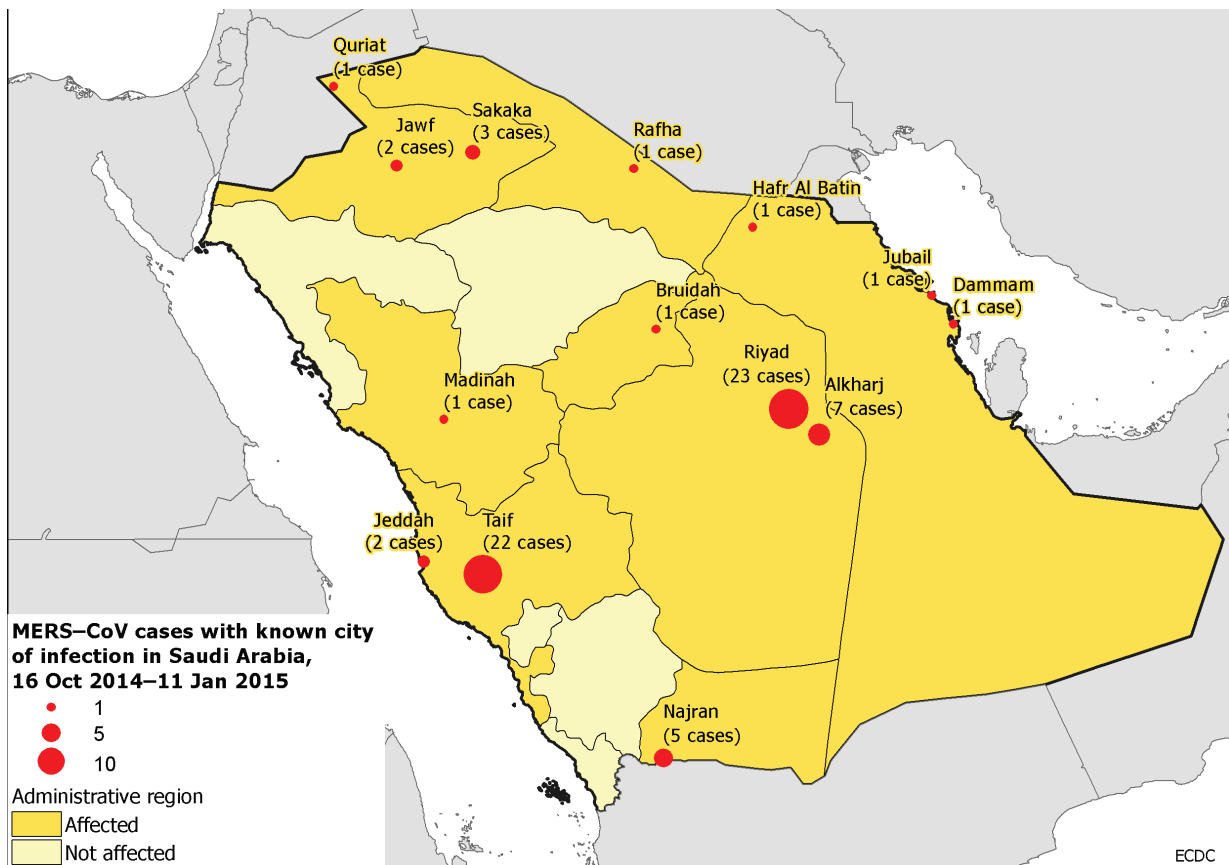


## Current epidemiological situation

Since the last ECDC rapid risk assessment of 16 October 2014, 76 cases and 37 deaths due to MERS-CoV have been reported, all related to the Arabian Peninsula.

Between 16 October 2014 and 11 January 2015, 71 cases have been reported by Saudi Arabia. Since August 2014 until October 2014, an increase of cases was reported from Saudi Arabia followed by a decrease since November 2014 (Figure 4).

**Figure 4. MERS-CoV cases with known city of infection in Saudi Arabia, 16 October 2014–11 January 2015**



On 17 October 2014, a case of a 42-year-old man who was working in Jeddah, Saudi Arabia, was reported from Turkey. The man sought medical attention on 25 September, when he developed symptoms. On 6 October, his symptoms worsened and he took a direct flight from Jeddah, Saudi Arabia to Hatay, Turkey, where he was admitted to a hospital on 8 October [1].

On 22 October 2014, a case was reported from Qatar of a 43 year old man. The man had frequently visited a camel barn 14 days prior to the onset of his symptoms [2].

On 25 December 2014, a case was reported by Jordan of a 70 year old man. The man developed symptoms in Saudi Arabia on 20 December and was admitted to hospital on 21 December. However he discharged himself and travelled to Jordan, where he was admitted to a private hospital. On 26 December he was transferred back to Saudi Arabia, where he was reported to be in critical condition. The patient had a history of consumption of raw camel milk [3]. This is the first case reported by Jordan since June 2014 [4]. In summary, this brings the number of cases reported from the beginning of the outbreak in Jordan to 19 (including seven cases reported retrospectively through a publication) [5].

On 8 January 2015 the Ministry of Health of Oman announced a fatal case of MERS-CoV. This is the first case reported by Oman since December 2013 [6]. On 11 January 2015, the Ministry of Health of Oman reported a new case, in a contact of the case reported on 8 January [7].

## Risk assessment: association with dromedary camels

Several studies have found antibodies against MERS-CoV in dromedary camels, but not in other animals surveyed [8]. Dromedary camels appear to be infected during their first year after birth [9]. The large peak of cases in spring 2014 coincided with the weaning period of camel calves and the seasonal peaks in calf diarrhoea episodes. This has led to hypotheses around potential transmission routes, such as excretion in milk or faecal contamination of milk [10].

In addition to the affected countries on the Arabian Peninsula, seropositive camels have been found in surveys from several countries in Africa and on the Canary Islands of Spain [8]. Recently, Iran reported an outbreak of MERS-CoV among dromedary camels illegally imported from Pakistan [11].

Although previous studies of the presence of MERS-CoV antibodies in abattoir workers and the evidence that the virus has circulated in camels for decades suggested that the virus is not easily transmitted from camels to humans, evidence on the role of dromedary camels as a potential reservoir of MERS-CoV and the direct transmission of the virus from infected camels to humans is accumulating [8]. A recent serological study among exposed people showed, however, no evidence for infection of people having close contact with infected camels. This does not undermine the hypothesis of infection from camels, but points at a low transmission rate, which is in line with the observed epidemiology of a low proportion of exposed humans becoming infected [12]. That some people apparently get infected without direct exposure to camels, points to an important role for immunological susceptibility.

## Conclusions

The overview of this virus, its epidemiology, clinical features, transmission and diagnostics as well as relevant public health measures are presented in the ECDC factsheet [8]. The source of MERS-CoV infection and the mode of transmission have still not been confirmed. Dromedary camels are a host species for the virus, and many of the primary cases in clusters have reported direct or indirect camel exposure. However, close contact with infectious camels does not always seem to result in human infections [12]. In addition, despite evidence of seropositive camels in several African countries and PCR-positive camels originating from Pakistan, no autochthonous cases arising from presumed camel contacts have been reported from outside the Middle East. This might be due to lack of diagnostic capacity in these countries. Serological screening kits are now also commercially available for both humans and camels.

The increase of human MERS-CoV cases in October 2014 is not explained by the calving or weaning of camel calves as it does not coincide with the calving and weaning seasons. The latest case reports do not suggest any link with participating in the Hajj or Umrah either. Similar to the upsurge in case numbers in April/May 2014, the increase in case numbers in Saudi Arabia in the autumn of 2014 could be linked to specific nosocomial outbreaks in Taif and Riyadh. In 2013, WHO proposed a multi-country case-control study to assess the risk factors associated with infections of primary cases, which the affected countries agreed to embark on [13]. Results of such a study could be highly informative for disease control purposes.

The incidence of MERS-CoV cases shows a decrease after the surge in October 2014, and the majority of MERS-CoV cases are still reported from the Middle East, mainly from Saudi Arabia. All cases have epidemiological links to the outbreak epicentre. The increase shows that the MERS-CoV continues to circulate, particularly in the Middle East and the risk for transmission is greatest for people in this area.

A large surge in infections seen in the spring of 2014 was mainly due to an outbreak in Jeddah, but driven by an increase in primary infections [14]. These events may be repeated in spring 2015, and therefore public health authorities in the epicentre are actively preparing appropriate responses. In Saudi Arabia, the response activity has recently been decentralised from a national command and control centre to regional health departments [15].

Also in the EU/EEA, public health authorities are prepared for timely detection and appropriate treatment of cases among returning travellers, should the need arise. Sensitisation of first-line healthcare staff to the fact that MERS-CoV is still circulating in the Middle East is prudent, not only for timely detection purposes, but also in order to ensure rapid implementation of infection control measures.

Taking into account the latest developments with respect to the Middle East respiratory syndrome coronavirus (MERS-CoV), ECDC's conclusion in this latest update continues to be that the assessed risk to the EU posed by the outbreak of MERS-CoV is low.

There is a continued risk of cases presenting in Europe following exposure in the Middle East and international surveillance for MERS-CoV cases remains essential.

Although importation of MERS-CoV cases to the EU remains possible, the risk of sustained human-to-human transmission in Europe remains very low.

## Related links

- ECDC factsheet for health professionals: <http://www.ecdc.europa.eu/en/healthtopics/coronavirus-infections/mers-factsheet/Pages/default.aspx>
- WHO Emergency Committee issued a [Statement on the Seventh Meeting of the IHR Emergency Committee regarding MERS-CoV](#) (1 October 2014) .The emergency committee concluded that the conditions for a Public Health Emergency of International Concern have not been met and recommended a number of public health measures concerning mainly the affected countries and countries in Africa.
- Global Alert and Response (GAR) [Corona virus infections](#). WHO has issued new surveillance guidance, case definitions and laboratory guidance, which were referred to in the ECDC Rapid Risk Assessment published on 21 August 2014.
- Public Health England published a [Risk Assessment of Middle East Respiratory Syndrome Coronavirus \(MERS CoV\)](#) 9 October 2014.
- [ECDC rapid risk assessment](#): Severe respiratory disease associated with Middle East respiratory syndrome coronavirus (MERS-CoV) – Update, 16 October 2014.
- [ECDC Epidemiological update: Middle East respiratory syndrome coronavirus \(MERS-CoV\)](#) 5 November 2014
- Saudi Arabia Ministry of Health: [Press releases](#).
- WHO Laboratory Testing for Middle East respiratory syndrome Coronavirus, [interim recommendations](#) (revised) September 2014.
- Lancet Infectious Diseases: [Case definition and management of patients with MERS coronavirus in Saudi Arabia](#).
- [WHO travel advice](#) on MERS-CoV for pilgrimages to Umra and Hajj.

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