

Throughout 2016, WHO's Eastern Mediterranean Region faced several major outbreaks from emerging and re-emerging diseases, including cholera in Somalia and Yemen; Middle East respiratory syndrome (MERS-CoV) in Saudi Arabia; Chikungunya in Somalia and Pakistan.

The occurrence of emerging infectious diseases, including the outbreaks in recent years, have occurred in security-compromised countries with complex and protracted humanitarian emergencies where large populations are internally displaced and there is inadequate access to clean water, sanitation, safety and basic health services. Surveillance systems in fragile health systems may not be detecting all health threats early and in a timely manner. This compromises the effectiveness of public health response measures and makes populations more vulnerable to infectious diseases.

Avian influenza A(H5N1) Egypt

Egypt is the only country in the WHO Eastern Mediterranean Region that continues to report human cases of avian influenza A(H5N1) since the virus was first reported in the country in March 2006 (Fig. 1). A total of 356 human cases of A(H5N1) have been reported in the country between 9 March 2006 and 31 December 2016; of these cases, 121 were fatal (case-fatality rate: 34%). In 2016, only 10 human cases of avian influenza A(H5N1) were reported, including 4 deaths (case-fatality rate: 40%).

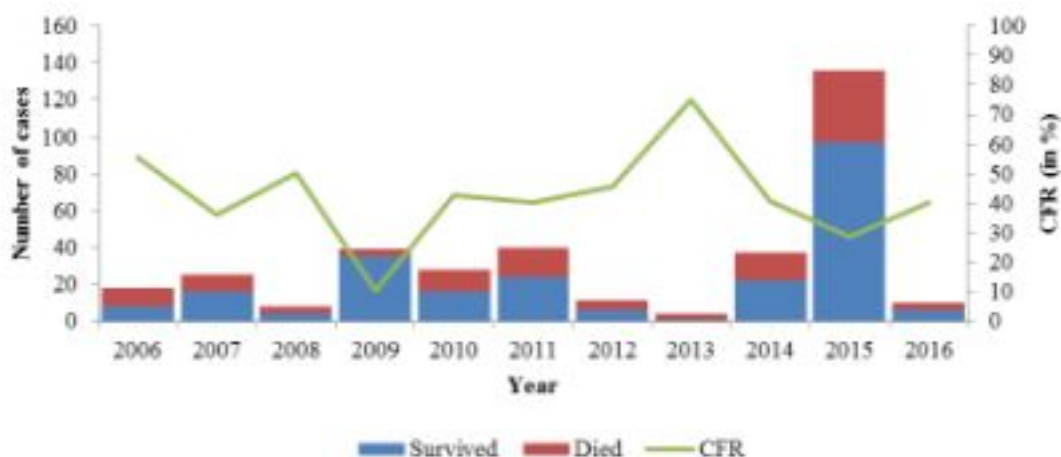


Fig. 1. Number of avian influenza A(H5N1) cases and case-fatality rate in Egypt,

2006–2016

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Chikungunya Pakistan

For the first time in its history, Pakistan reported laboratory-confirmed cases of Chikungunya in 2016. The first case was laboratory-confirmed on 19 December 2016 and since then until the end of December 2016, a total 353 suspected cases of Chikungunya were reported from several districts in the province of Karachi (Fig. 2). The majority of cases were reported from the Kokarpar area. The highest number of cases (86 or 24.4% of cases) were reported in the 30–39-year age group followed by the 20–29-year old age group (73 or 20.7% of cases).

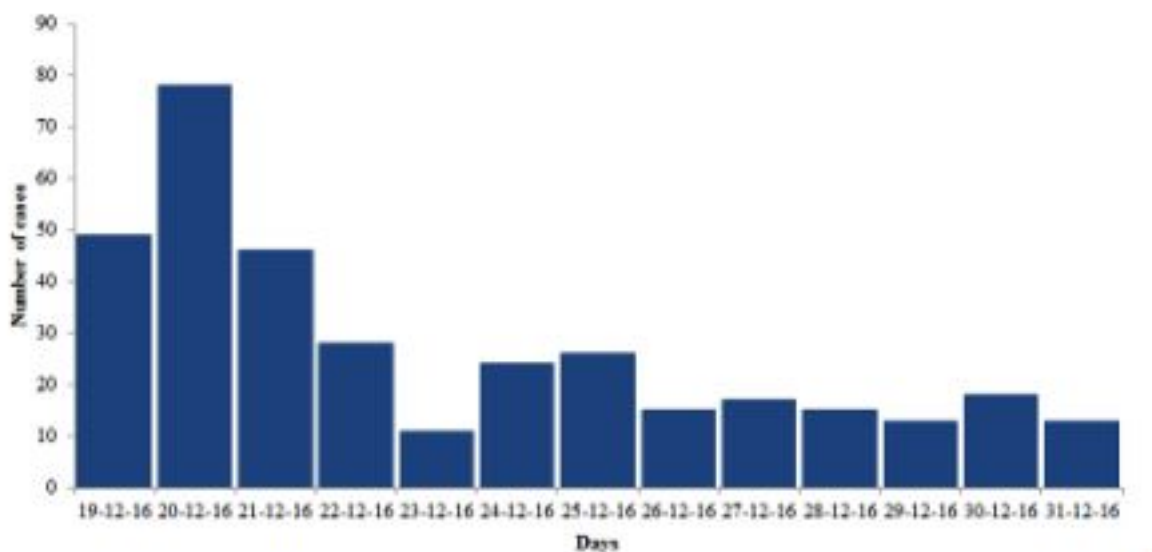


Fig. 2. Epidemic curve of Chikungunya in Pakistan, 19–31 December 2016

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Somalia

During May 2016, Somalia reported a few sporadic cases of Chikungunya from its capital city, Mogadishu. At least 11 blood samples were tested positive for Chikungunya virus at the Kenya Medical Research Institute. The tests were done using rt-PCR, as well as by ELISA. This is also the first time that Somalia reported human infection caused by Chikungunya virus.

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Cholera Somalia

Cholera has been endemic in Somalia for the past two decades. Somalia has experienced multiple large cholera outbreaks during this period which were associated with significantly high mortality. In 2016, a total of 15 619 suspected cases of cholera, with 548 associated deaths (case–fatality rate: 3.5%) were reported in 9 out of 18 regions of Somalia. The regions include: Middle Juba, Lower Juba, Banadir, Hiraan, Lower Shebelle, Middle Shebelle, Gedo, Bay, and Bakool Regions (Fig. 3). The first case was laboratory-confirmed on January 2016 as *Vibrio cholerae* serotype of "Inaba" and "Ogawa" during this outbreak.

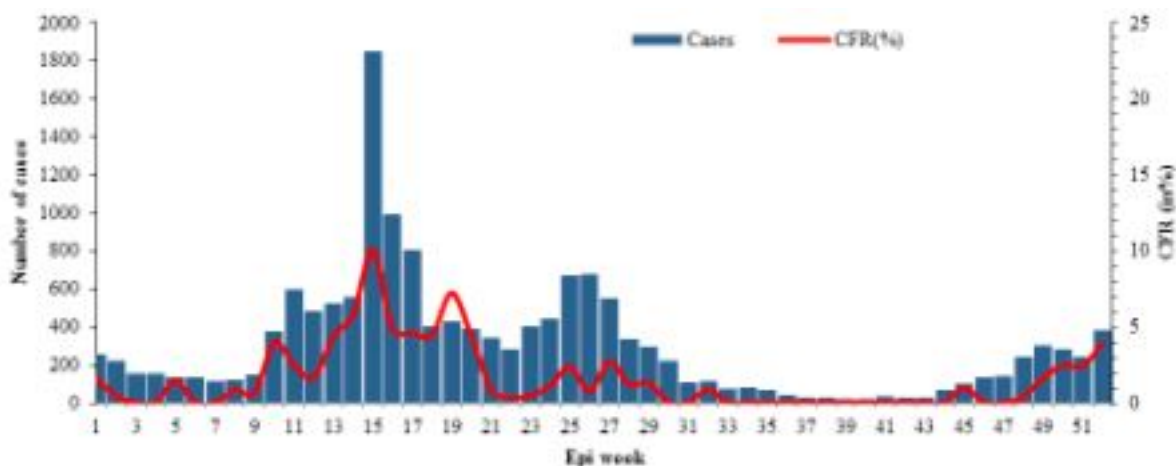


Fig. 3. Suspected cholera cases and deaths reported in Somalia, 1 January–31 December 2016

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Yemen

After a gap of 5 years, Yemen reported a cholera outbreak in 2016. The last major outbreak reported from the country was in 2011, resulting in over 31 000 suspected cases, including 134 related deaths (case–fatality rate: 0.4%). By the end of December 2016, the Ministry of Public Health and Population reported 15 704 suspected cholera cases, including 98 associated deaths (case–fatality rate: 0.6%) from 157 districts in 15 governorates (Fig. 4). The first case was laboratory confirmed in October 2016, EPI week 34, as *Vibrio cholerae* 01.

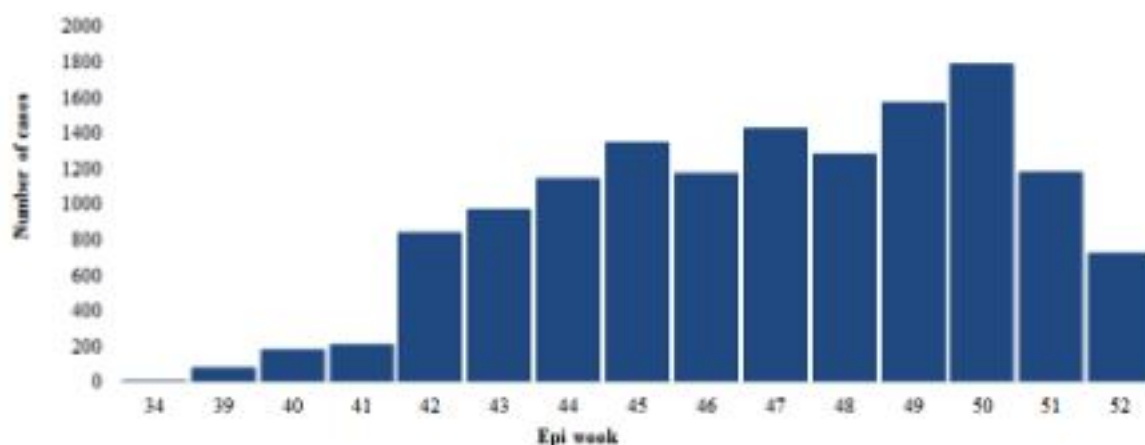


Fig. 4. Epidemic curve of suspected cholera cases reported in Yemen , Epi weeks 34–52, 2016

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Crimean-Congo haemorrhagic fever (CCHF) Pakistan

Crimean-Congo haemorrhagic fever is endemic in Pakistan. During the last few years, the country has seen an increasing trend and cases have spread from its established foci in Baluchistan province to all other provinces, including to the capital city of Islamabad. From January to October 2016, Crimean-Congo haemorrhagic fever cases recorded a dramatic rise and the number exceeded those reported in 2012, 2013, 2014 and 2015. A total of 431

suspected cases of Crimean-Congo haemorrhagic fever, including 60 deaths (case–fatality rate: 14%) were reported from 4 provinces in the country namely: Punjab, Sindh, Baluchistan, and Khyber Pakhtunkhwa provinces (Fig. 5).

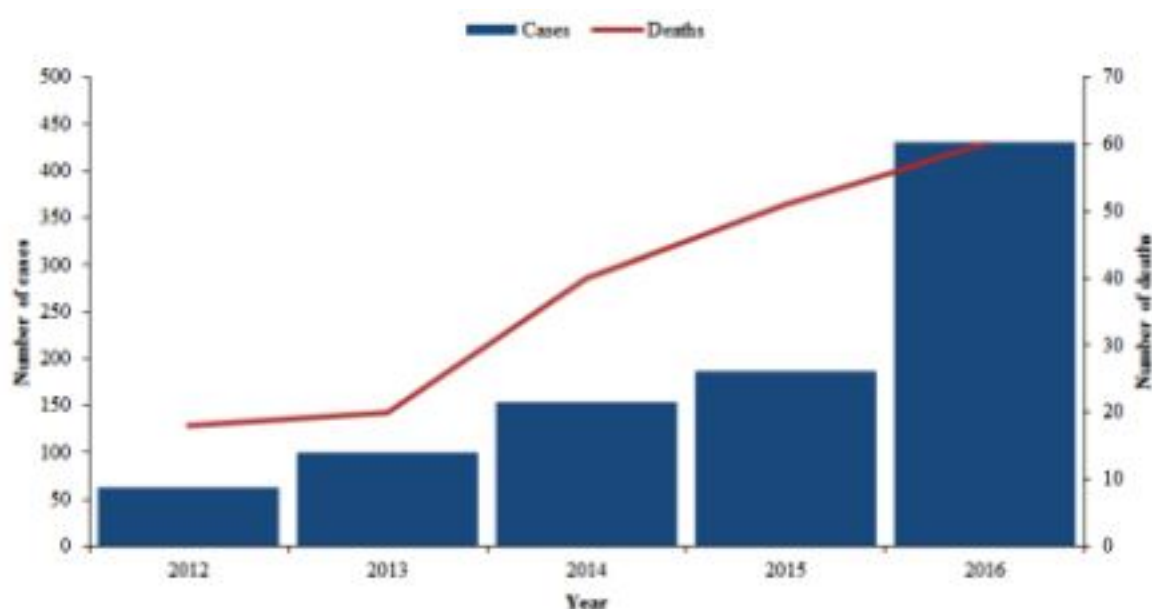


Fig. 5. Suspected cases of Crimean-Congo haemorrhagic fever reported from Pakistan, 2012–2016

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Dengue Yemen

Dengue fever is an endemic disease in Yemen, with outbreaks repeatedly occurring in a number of high-risk governorates over the last 10 years. In the year 2016, dengue fever recorded a substantial rise in Yemen. A total of 28 185 suspected cases were reported in the country between January and December 2016. A total of 65 related deaths were also reported during the same period (case–fatality rate: 0.2%), (Fig. 6).

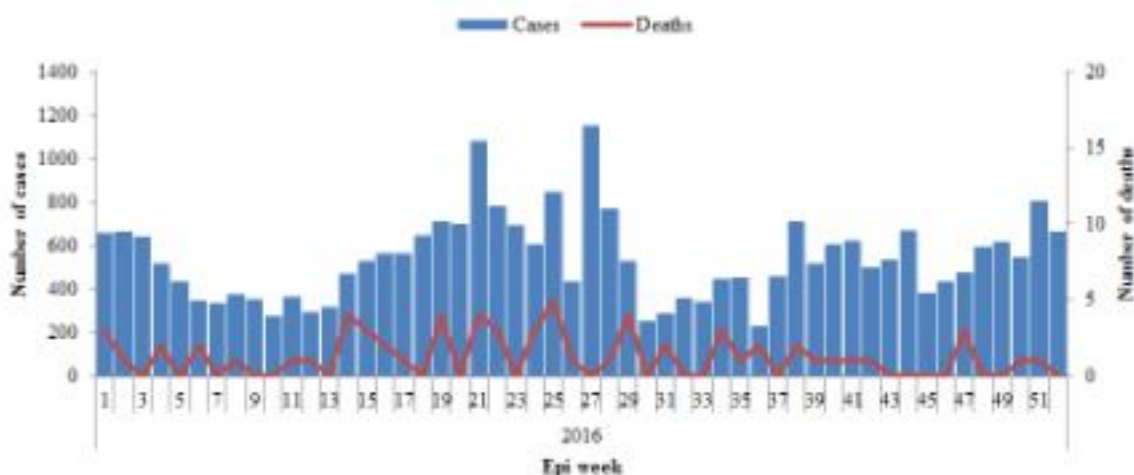


Figure 6. Number of cases and deaths from Dengue fever reported in Yemen, Middle East respiratory syndrome (MERS) Bahrain, Oman, Qatar, Saudi Arabia and United Arab Emirates

During 2016, MERS-CoV continued to circulate in the countries of Middle East and 5 member countries of the Gulf Cooperation Council: Bahrain, Oman, Qatar, Saudi Arabia and United Arab Emirates, all reported community acquired cases during 2016 (Fig. 7) (Table 1).

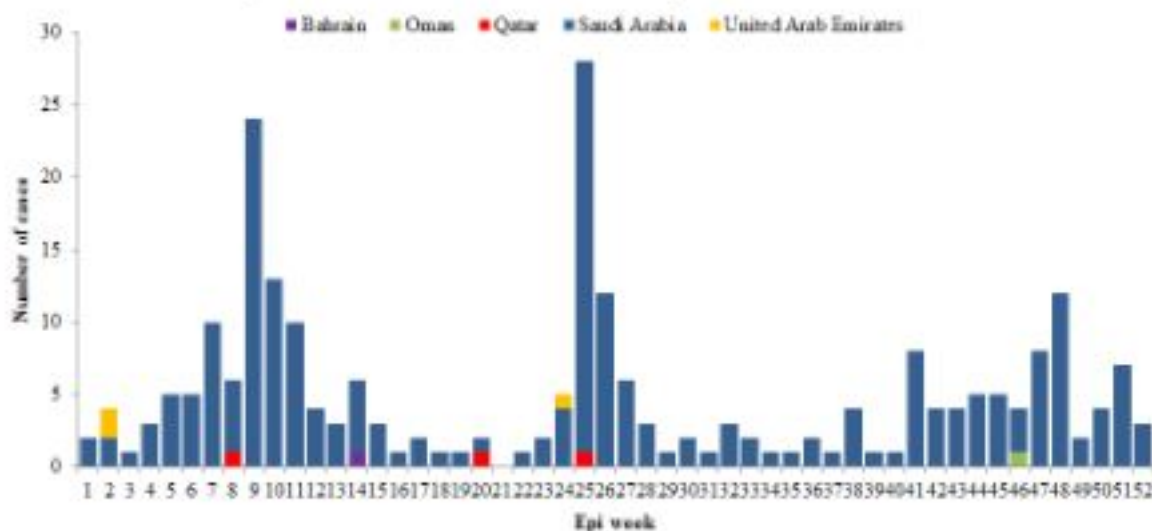


Fig. 7. Number of MERS-CoV cases per week in the Region, 2016

Table 1. Number of MERS-CoV cases and deaths reported from 5 countries in the Eastern

Mediterranean Region in 2016

Province/area	
Karachi	4600
<u>Balochistan</u>	2834
<u>Tharparkar (Sindh)</u>	785
<u>Khybe Pakhtounkhwa</u>	136
Azad Kashmir	1
Punjab	18
Federally administrated tribal area (FATA)	1
Islamabad capital territory (ICT)	0
<u>Gilgit Baltistan</u>	0
TOTAL	8375

Since the virus first appeared in 2012, a total of 1877 laboratory-confirmed cases of MERS, globally, were reported to WHO until December 2016. There were at least 692 deaths (case-fatality rate: 36.8%) among these reported cases. (Table 2).

Table 2. Epidemiological characteristics of MERS-CoV cases reported globally between January and December in 2013 and 2016

State	Locality	Suspected C
Khartoum	Jabal Awlia	1
	Kassala	128
Kassala	West Kassala	7
	Rifi Kassala	25
East Darfur	Assalya	1
	Elddeain	1
West Darfur	Habila	1
	Kerink	4
South Kordofan	Abu Karshola	1
Nile River	Al Damar	3
Al Jezeera	24 Al Qarshi	1
Red Sea	Swakin	2
	Port Sudan	4
Total		179

The epidemiological and demographic characteristics of the virus (Table 2) have not changed since the virus was first reported in 2016.

Around 81% of the globally reported cases 1526 cases with 624 deaths (case–fatality rate:

40.9%); were reported by Saudi Arabia. The age group of those aged 50–59 years continues to be the group at highest risk for acquiring infection for both males and females. However, the females in the age group of 20–29 and 30–39 are acquiring MERS-CoV infection in higher numbers when compared to males in the same age group. (Fig. 8 and 9) People in the age group of 50–59 among the primary cases have higher deaths compared to secondary cases in the same age group.

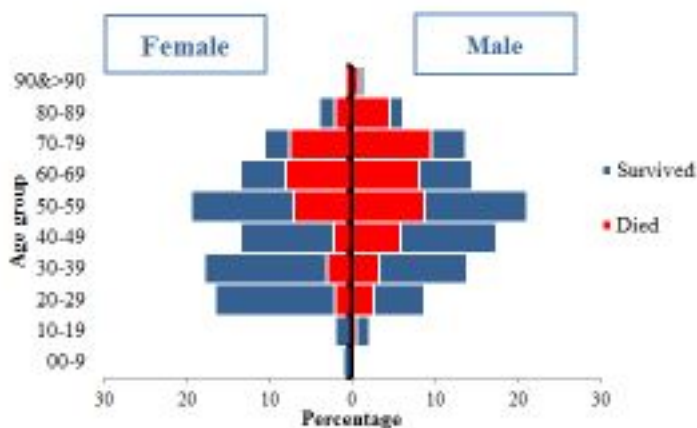


Fig. 8. Gender and fatality distribution of MERS-CoV cases reported from Saudi Arabia, 2012–2016

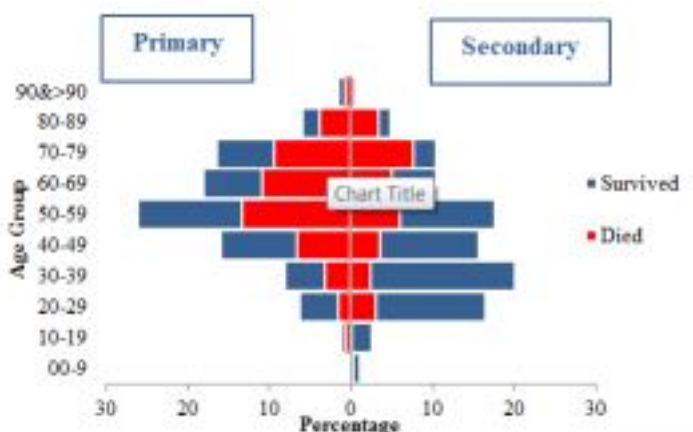


Fig. 9. Age and fatality distribution of primary and secondary cases of MERS-CoV

reported from Saudi Arabia, 2012–2016

In 2016, there was a marked reduction of secondary cases of MERS in Saudi Arabia compared to previous years signaling that the transmissibility of the virus has not changed or increased (Table 3 and Fig. 10).

Table 3. Characteristics of MERS-CoV cases reported from Saudi Arabia, 2012–2016

	Outbreak	Hospital	Date of first reported case	Date of last reported case	Survived	Died	CFR (%)	Asymptomatic cases	Grand Total
1	Hospital outbreak 1	Wadi Al-Dawasir General Hospital, Riyadh	26-Feb-17	26-Apr-17	14	1	6.7	8	15
2	Hospital outbreak 2	King Abdullah Hospital, Asir/Baha	3-May-17	13-May-17	1	2	66.7	1	3
3	Hospital outbreak 3	Specialized Medical Centre Private Hospital, Riyadh	24-Apr-17	15-May-17	4	1	20	3	5
4	Hospital outbreak 4	King Salman Hospital, Riyadh	1-Jun-17	5-Jun-17	5	1	16.7	4	6
5	Hospital outbreak 5	King Saud Chest Hospital, Riyadh	2-Jun-17	15-Jun-17	9	0	-	4	9
6	Hospital outbreak 6	King Saud Medical Hospital, Riyadh	26-May-17	17-Jun-17	27	6	18.2	21	33
7	Hospital outbreak 7 (a)	Dawmat Aliandal General Hospital, Al-Jawf	27-Jul-17	10-AUG-17	12	1	7.7	9	13
8	Hospital outbreak 7 (b)	Dawmat Aliandal General Hospital, Al-Jawf	17-Aug-17	31-AUG-17	7	0	-	5	7
	Total				79	12	13.2	55	91

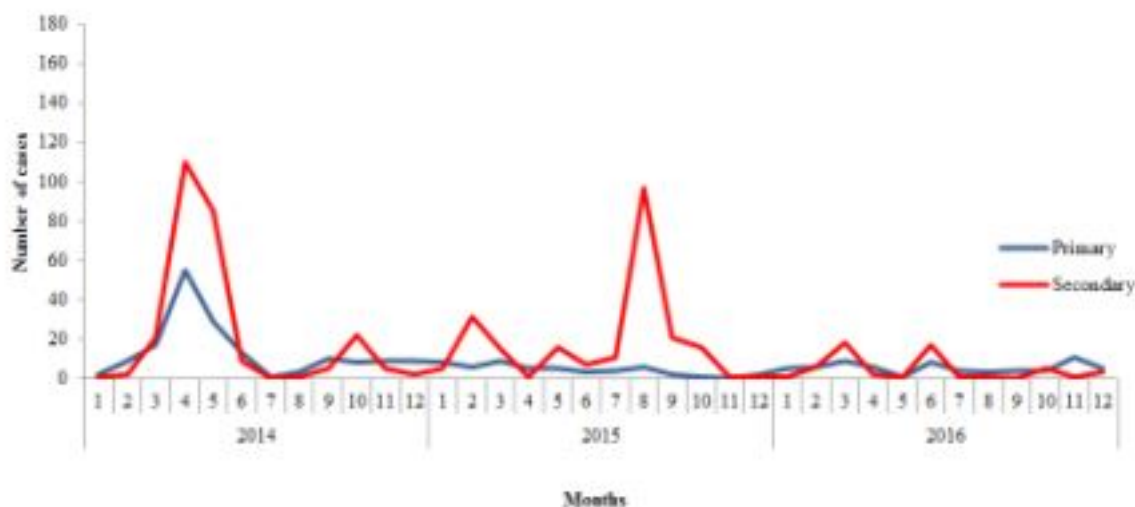


Fig. 10. Number of primary versus secondary cases of MERS-CoV in Saudi Arabia, 2014–2016

Health care workers continue to be at risk of acquiring infection from MERS-CoV. However, the number of health care workers acquiring infection owing to "unprotected exposure" is

considerably low in 2016 compared to previous years (13% compared to average 18.7% reported since 2012) (Fig. 11 and 12).

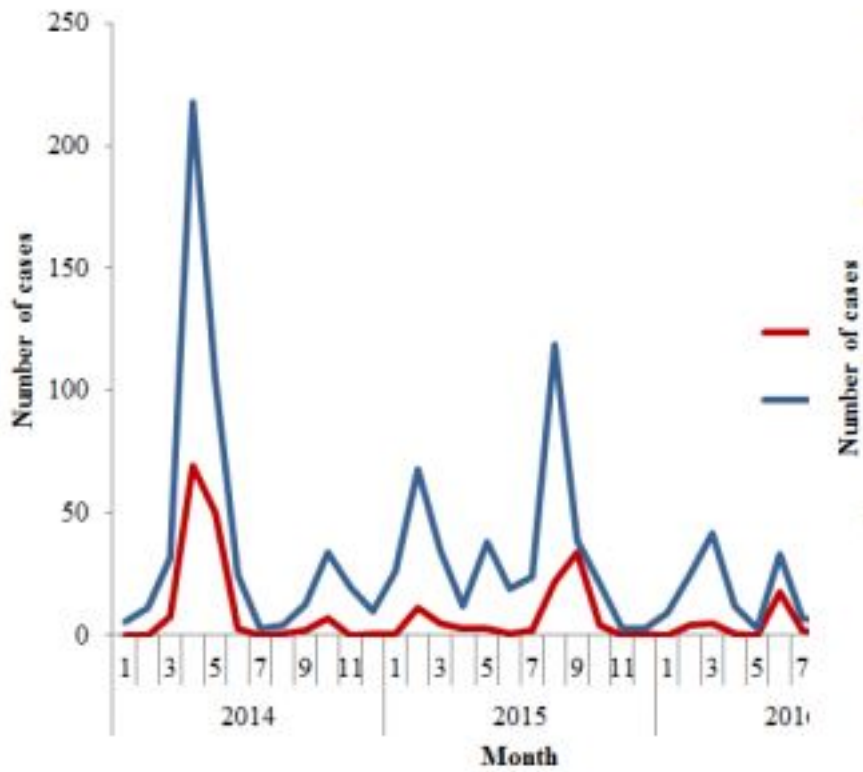


Fig. 11. Number of MERS-CoV cases among health care workers and non health care workers in Saudi Arabia, 2014–2016

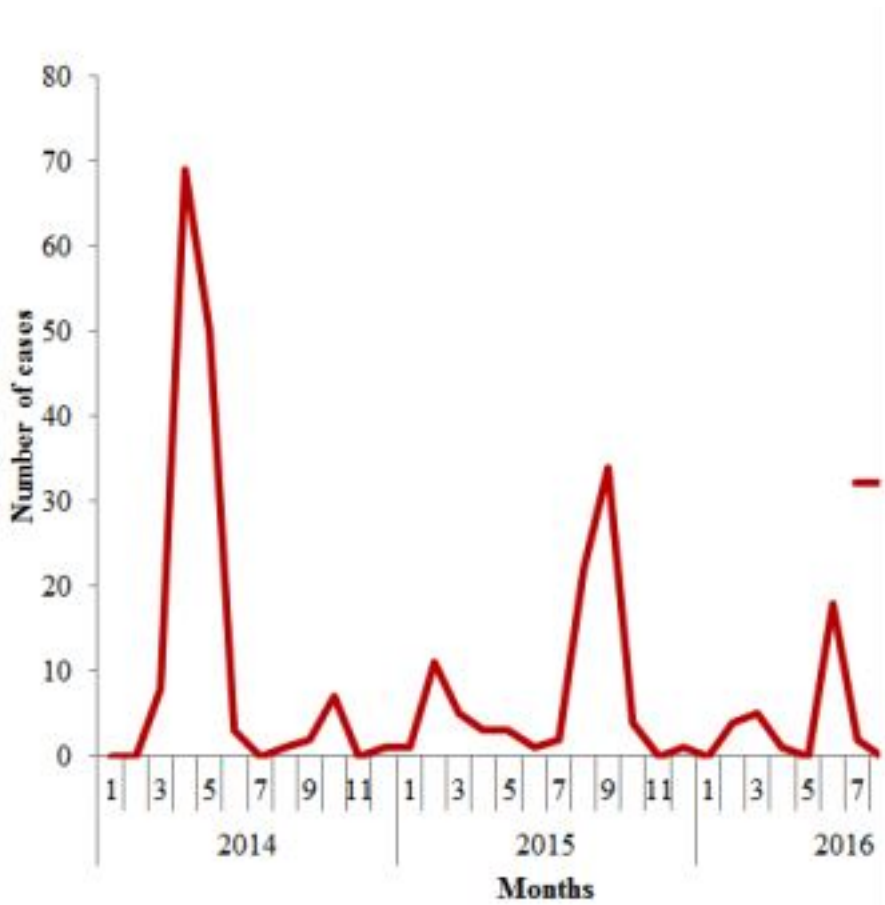


Figure 12. Number of CHIKV cases and deaths (both cases and deaths) reported in the Eastern Mediterranean Region, 2014-2016

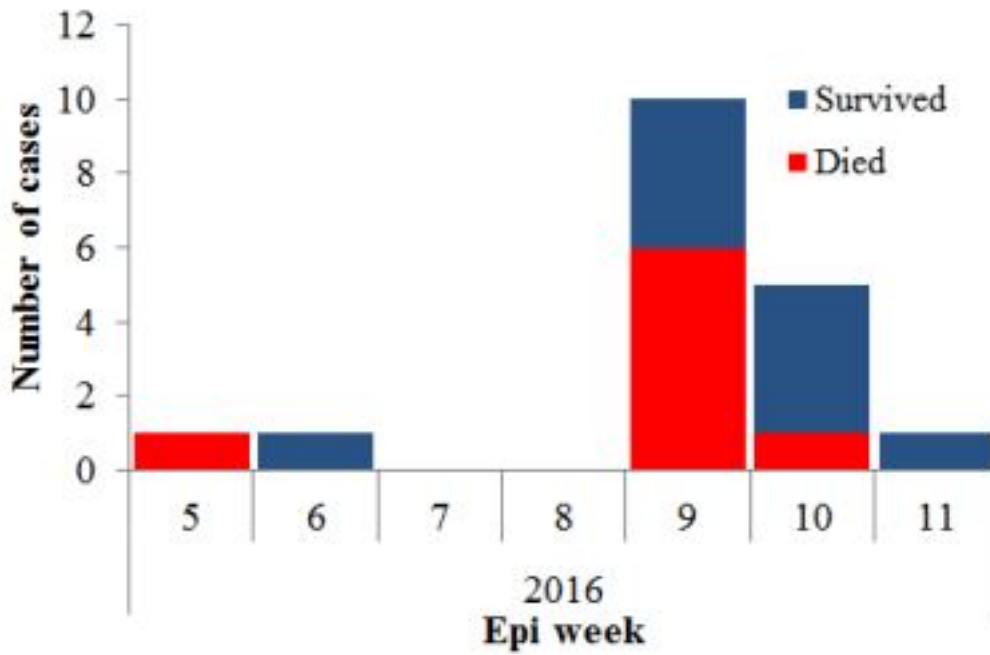


Fig. 13. Number of MERS-CoV cases during Buraida outbreak, March 2016 ($n=18$)

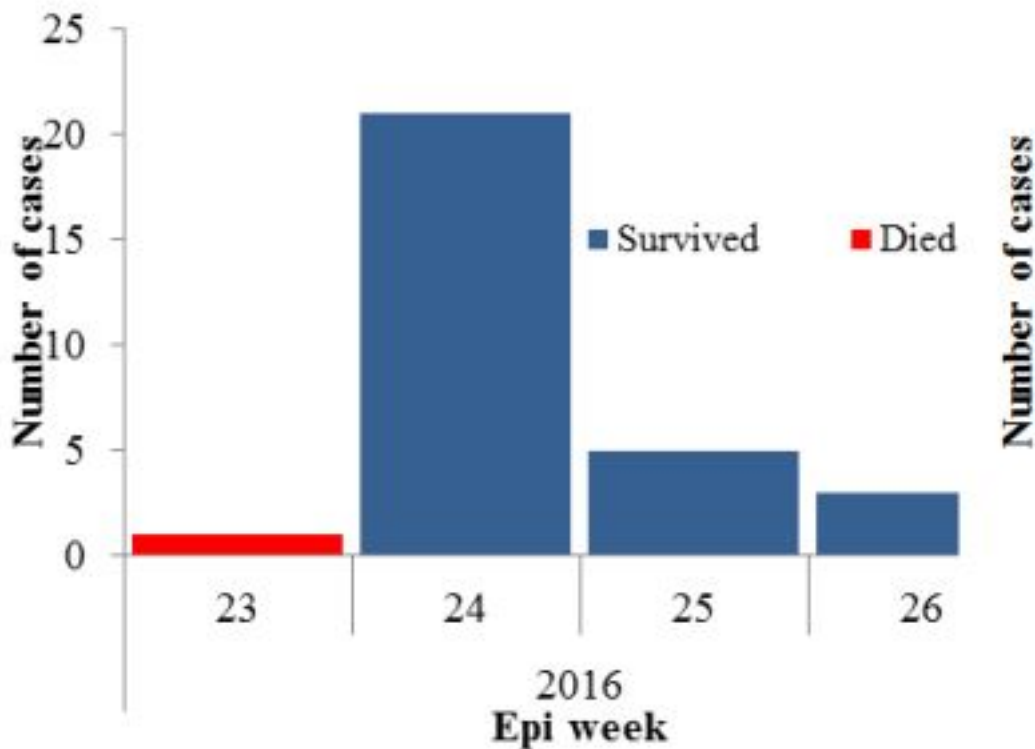


Fig. 14. MERS-CoV outbreak in Saudi Arabia, 2016 hospital outbreak, June 2016 ($n=30$)

Disease	Country	First reported case	Last reported case	Total cases	Deaths	Case-fatality rate (%)
Avian influenza/ A(H5N1)	Egypt	Jan-2017	Dec-2017	30 460	818	2.3
Avian influenza/ A(H5N1)	Egypt	02-Feb-2017	13-Apr-2017	359	122	34
Chikungunya	Pakistan	29-Apr-2017	Ongoing	14 348	31	0.18
Chikungunya	Pakistan	13-Dec-2016	Ongoing	872	0	0
Chikungunya	Somalia	01-Jan-2017	Ongoing	76 764	1159	1.47
Chikungunya	Yemen	27-Apr-2017	Ongoing	1 019 044	2237	0.22
Cholera	Yemen	23-May-2017	13-Dec-2017	305	3	0.6
Crimean-Congo Haemorrhagic Fever	Afghanistan	Jan-2017	Ongoing	342	41	12.0
Crimean-Congo Haemorrhagic Fever	Pakistan	Jan-2017	Oct-2017	188	31	16.57
Dengue	Pakistan	14-Jun-2017	04-Dec-2017	25 872	69	0.2
Dengue	Sudan	04-Dec-2017	Ongoing	179	2	1.2
Diphtheria	Yemen	14-Aug-2017	Ongoing	429	42	9.79
Diphtheria	Oman	03-Aug-2017	12-Aug-2017	02	0	0
Diphtheria	Qatar	15-Mar-2017	14-Mar-2017	03	0	0
Middle East respiratory syndrome	Saudi Arabia	03-Jan-2017	Ongoing	224	69	27.7
Middle East respiratory syndrome	United Arab Emirates	24-Mar-2017	11-Aug-2017	07	0	0
Middle East respiratory syndrome	Lebanon	08-Jun-2017	08-Jun-2017	01	0	0
Travel-associated dengue	United Arab Emirates	30-Apr-2017	26-Oct-2017	76	0	0
Travel-associated dengue	Qatar	02-Jun-2017	02-Jun-2017	01	0	0

Table 5. Infectious disease outbreaks reported from the countries of the Region in 2016

Disease	Country	First reported case	Last reported case	Total cases	Deaths	Case-fatality rate (%)
1. Avian influenza/ A(H5N1)	Egypt	Jan 2016	28 Jul 2016	10	4	40
2. Chikungunya	Pakistan	19 Dec 2016	31 Dec 2016	353	0	-
	Somalia	May 2016	May 2016	11	0	-
3. Cholera	Somalia	1 Jan 2016	31 Dec 2016	15 619	548	3.5
	Yemen	6 Oct 2016	31 Dec 2016	15 704	98	0.6
4. Crimean-Congo Haemorrhagic Fever	Pakistan	1 Jan 2016	19 Oct 2016	431	60	14
5. Dengue	Yemen	Jan 2016	Dec 2016	28 185	65	0.2
6. Middle East respiratory syndrome	Bahrain	4 Apr 2016	4 Apr 2016	1	1	100
	Oman	18 Nov 2016	18 Nov 2016	1	0	-
	Qatar	19 Feb 2016	8 Jun 2016	3	1	33.3
	Saudi Arabia	9 Jan 2016	31 Dec 2016	240	70	29.2
	United Arab Emirates	11 Jan 2016	9 Jun 2016	3	1	33.3

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