

Current Event

MERS Super-Spreading events

The recent outbreak of MERS reported from a university hospital raised the possibility of having a super-spreading events resulting in a larger outbreak.

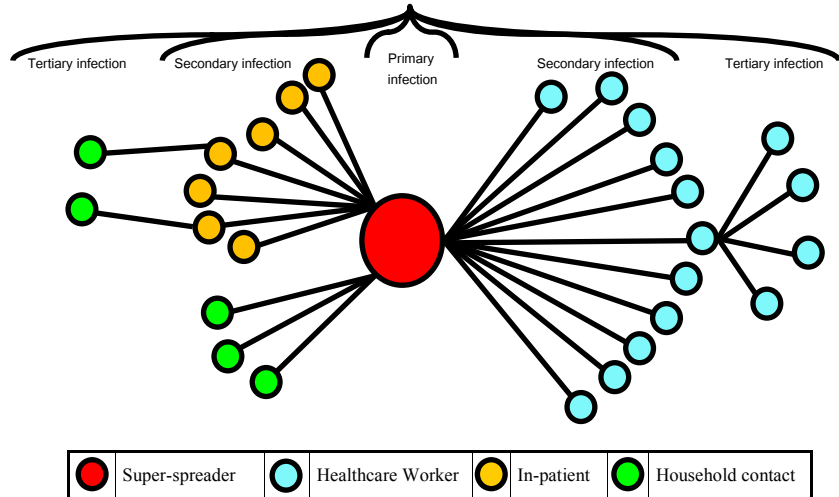
Editorial Notes

Super-spreading events were strongly suspected considered in some MERS outbreaks. Certain MERS infected individual may transmits an infection disproportionately to more susceptible contacts, possibly because of increased viral load, heavy respiratory secretions, than the average infected individual. Super-spreading events constitute the presence of those “highly infectious” individuals in crowded areas like emergency rooms in contact with other patients, healthcare workers and environment. Such events can cause large outbreaks similar to the outbreak in South Korea last year.

During the outbreak of Korea, majority of MERS transmission were linked to super-spreading events. Similarly, the recent nosocomial MERS outbreak in Riyadh (2016) was probably related to a super-spreading event (Figure 1). This was also observed in the outbreak of 2013 in Al-Ahsa. Misdiagnosis or late diagnosis due to co-infection with another pathogen and/or immunosuppression are one of the facets in super-spreading incidents along with individual variation in infectivity and the number of contacts. It is self-evident, however, that other factors played a role in these incidents.

Super-spreading events tied to nosocomial outbreaks of MERS have been attributed in part to suboptimal infection prevention and control (IPC) measures, overcrowded emergency departments (ED), limited isolation rooms in EDs and inadequate ventilation, delayed hospital admission, inter-hospital transfers, and/or poor communication between healthcare facilities

Figure 1: Simplified transmission diagram illustrating the super-spreading event of MERS-CoV, Riyadh, King Khaled University Hospital (June, 2016)



Cases of MERS-CoV: International Week (IW) No. 29: 17 – 23 July 2016

Total	2
Symptomatic (S)	2
Asymptomatic (AS)	0
Healthcare worker (S)	0
Healthcare Worker (AS)	0

ties (HCFs). Super-spreader events are key to amplify nosocomial transmission of MERS and support the adoption of IPC precautions particularly in treatment rooms.

It is important to identify such “highly infectious” individuals and super spreading events through full investigation of the transmission pathways from a single index case to secondary cases in HCFs. Rapid case detection and strict adherence to IPC measures, which can rapidly reduce the risk of super-spreading events and therefore the size of the nosocomial outbreaks.

Predicting and identifying super-spreaders open significant medical and public health challenges, and represent important aspects of infectious disease management and emergency preparedness plans. Generally, the key to prevent large outbreaks of any emerging infectious diseases is through complete preparedness in HCFs and proper collaboration between health and other governmental agencies.

Recent Publications:

Park SH, Kim YS, Jung Y, Choi SY, Cho NH, Jeong HW, Heo JY, Yoon JH, Lee J, Cheon S, Sohn KM. Outbreaks of Middle East Respiratory Syndrome in Two Hospitals Initiated by a Single Patient in Daejeon, South Korea. Infect Chemother. 2016 Jun;48(2):99-107. doi: 10.3947/ic.2016.48.2.99.

MERS-CoV in KSA 2016*

Region	Case	Primary	Secondary	U.C.
Riyadh	67	27	38	2
Qassim (1)	37	11	23	3
Najran (1)	11	9	1	1
Jeddah	9	6	2	1
Hail	7	6	0	1
Taif	6	5	1	0
Asir	5	4	1	0
Al-Ahsaa	4	4	0	0
Eastern Region	4	4	0	0
Madinah	3	3	0	0
Al-Baha	2	1	0	1
Bisha	1	1	0	0
Tabuk	1	1	0	0
Makkah	0	0	0	0
Al-Joaf	0	0	0	0
Jazan	0	0	0	0
Northern Borders	0	0	0	0
Qunfotha	0	0	0	0
Hafr Al-Batin	0	0	0	0
Qurayyat	0	0	0	0
Total	157	82	66	9

Case: Confirmed Symptomatic. U.C.: Unclassified cases
*Period: Form 3 Jan to 23 July 2016
Regions with new cases of this week are highlighted in yellow.