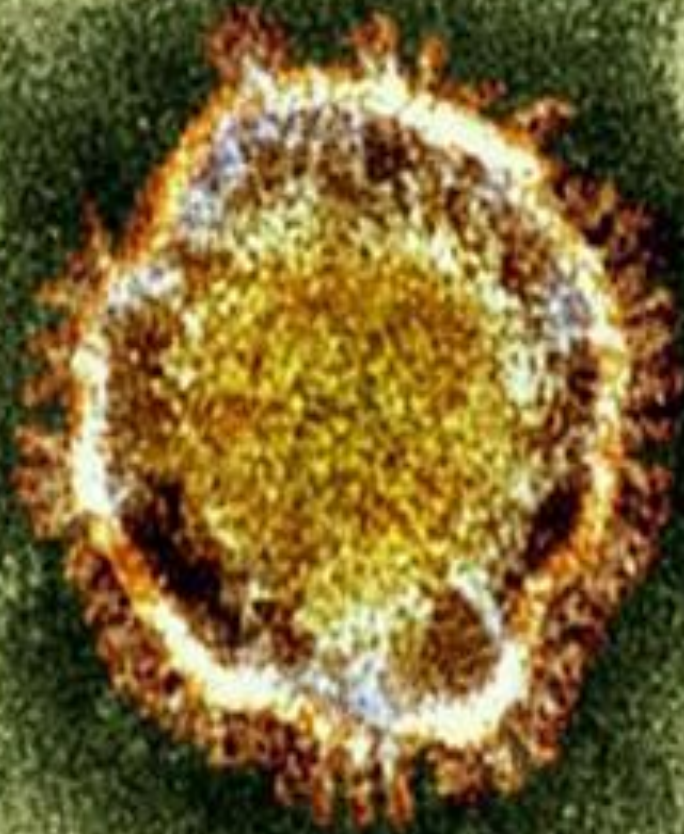




MINISTRY OF HEALTH
SINGAPORE

Global Health Security and Singapore's Public Health Response

*Dr Steven Ooi, Adj Associate Professor
and Dy Director (Policy and Control),
Communicable Diseases Division*



Global Health Security?

What is MERS-CoV?

- Middle East Respiratory Syndrome (MERS) is a new disease, identified in Saudi Arabia in 2012
- Infection caused by novel coronavirus (CoV)
- Coronaviruses have been known to cause diseases ranging from the common cold to Severe Acute Respiratory Syndrome (SARS).

What is MERS-CoV?

- Spectrum of disease ranged from mild to severe respiratory disease and death
- All symptomatic cases had respiratory symptoms, 1 in 3 had gastrointestinal symptoms
- Asymptomatic cases have been detected through contact tracing and testing

Case Summary

Country	2012		2013		2014		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Jordan	2	2			4	2	6	4
Kingdom of Saudi Arabia	5	3	136	54	305	61	446	118
Qatar	2	1	7	4			9	5
United Arab Emirates			11	4	51	3	62	7
Oman			2	2	2	2	4	4
Kuwait			2	0	1	1	3	1
Yemen					1	1	1	1
Lebanon					1	0	1	0
United Kingdom			3	2			3	2
France			2	1			2	1
Tunisia			3	1			3	1
Italy			1	0			1	0
Malaysia					1	1	1	1
Greece					1	0	1	0
Egypt					1	0	1	0
United States					2	0	2	0
Total	9	6	167	68	370	71	546	145

As of 14 May, World Health Organization (WHO) reported a total of 546 cases of MERS-CoV infection including 145 deaths from 16 countries.

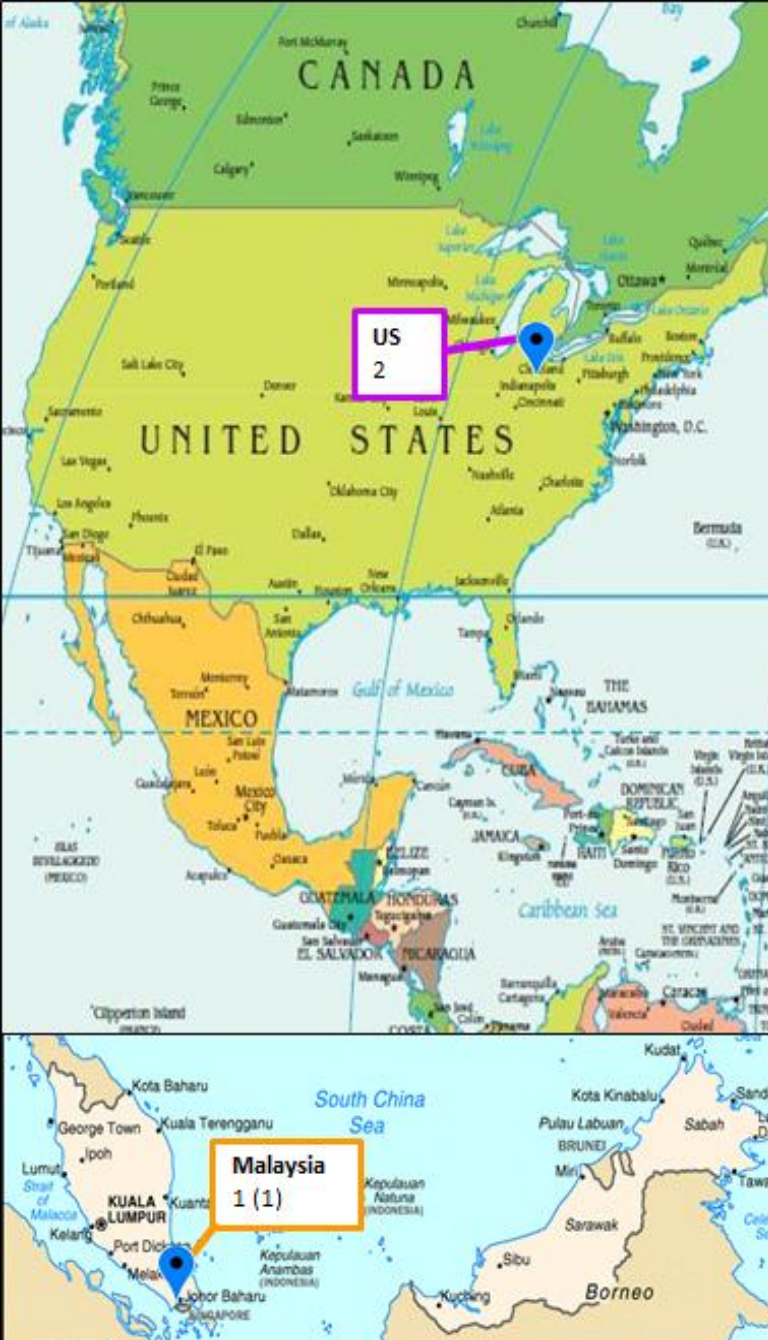
Case Summary

Saudi Arabia

- Outbreak in Jeddah comprising of 152 cases from 14 hospitals, including 33 healthcare workers (HCWs), since March 2014
- Hospital cluster in Tabuk comprising of 10 cases including 7 HCWs

UAE

- Hospital cluster in Abu Dhabi comprising of 28 cases including 25 HCWs in April



✖ Areas with serological and/or genomic evidence of MERS-CoV or a MER-like CoV in dromedary camels.

* 1 case in the Philippines

As of 14 May 2014

Transmission

- Animal origin - camels likely source of infection to humans, however mechanism remains unclear
- MERS-CoV can also be transmitted between humans among close contacts
 - family clusters: Saudi Arabia, Tunisia, UK
 - hospital transmission: France, Jordan, UAE, Saudi Arabia

Transmission

- Evidence did not suggest that recent increase reflects significant change in the transmissibility of the virus
- Increase in primary cases may be due to seasonal factor, amplified by outbreaks in hospitals due to breaches in infection prevention and control measures
- Majority of human-to-human infections occurred in health care facilities, and one quarter of all cases were HCWs
- Reasons for the increase in the number of primary community cases, as well as the infection route, remain unknown
- **Sustained human-to-human transmission in the community has not been observed**

Global Health Security

- WHO's International Health Regulations (IHR) Emergency Committee met concerning MERS-CoV on 13 May 2014
- Seriousness of the situation increased in terms of potential public health impact, but no evidence of sustained human-to-human transmission
- Conditions to declare a Public Health Emergency of International Concern (PHEIC) not yet been met

Global Health Security

- IHR Emergency Committee urged actions to:
 - Improve policies for infection prevention and control, especially in health-care facilities
 - Speed up research on risk factors and assess the effectiveness of control measures
 - Strengthen case and contact identification and management
 - Enhance awareness and communicate risk to the public, health professionals, at-risk groups, and policy makers
 - Share information in a timely manner with WHO

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WHY DO I
FEEL THIS COULD
BE A GAMBLE?

Singapore's Public Health Response to Emerging Diseases

Risk Assessment

Prevention and Control

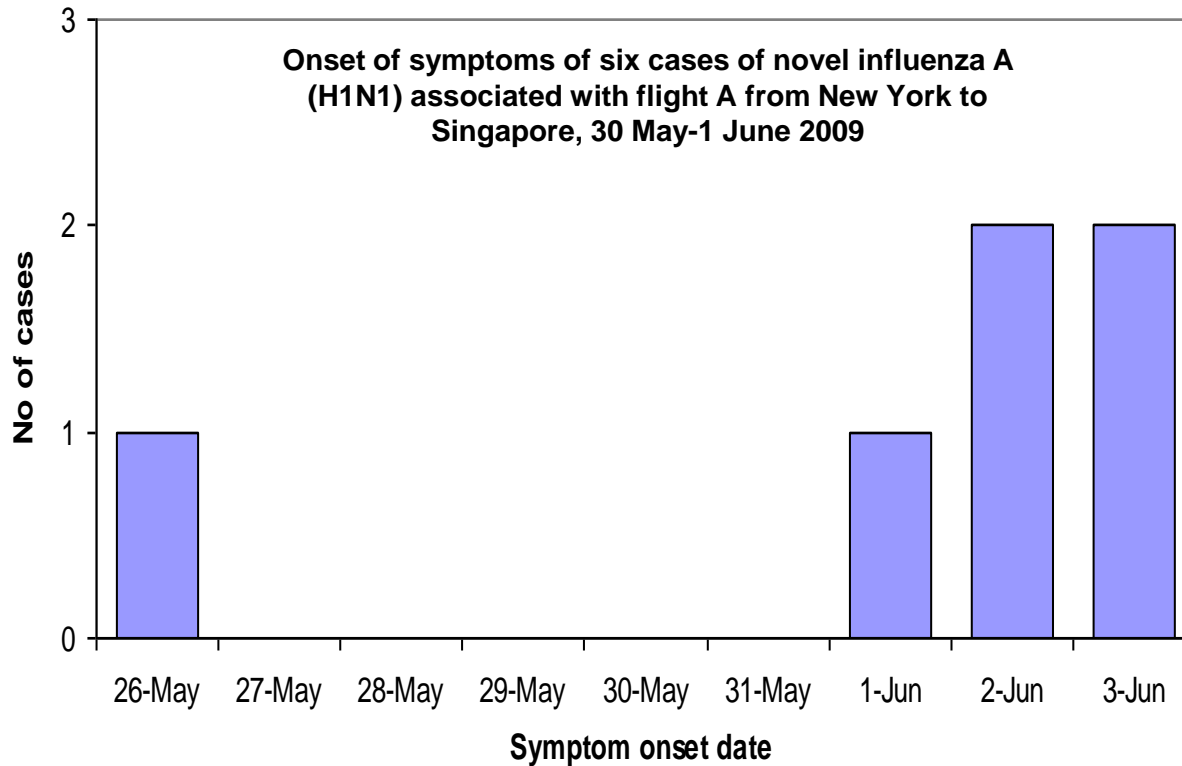
1. Minimise the risk of infection in travelling to the Middle East
2. Early detection
3. Prevent spread

Risk Assessment

- All cases outside the Middle East remain associated with travel from the Middle East
- Risk of a possible imported case of MERS-CoV among incoming travellers from affected areas has increased
- Risk of person to person spread in the community in Singapore in the event of an imported case remains low

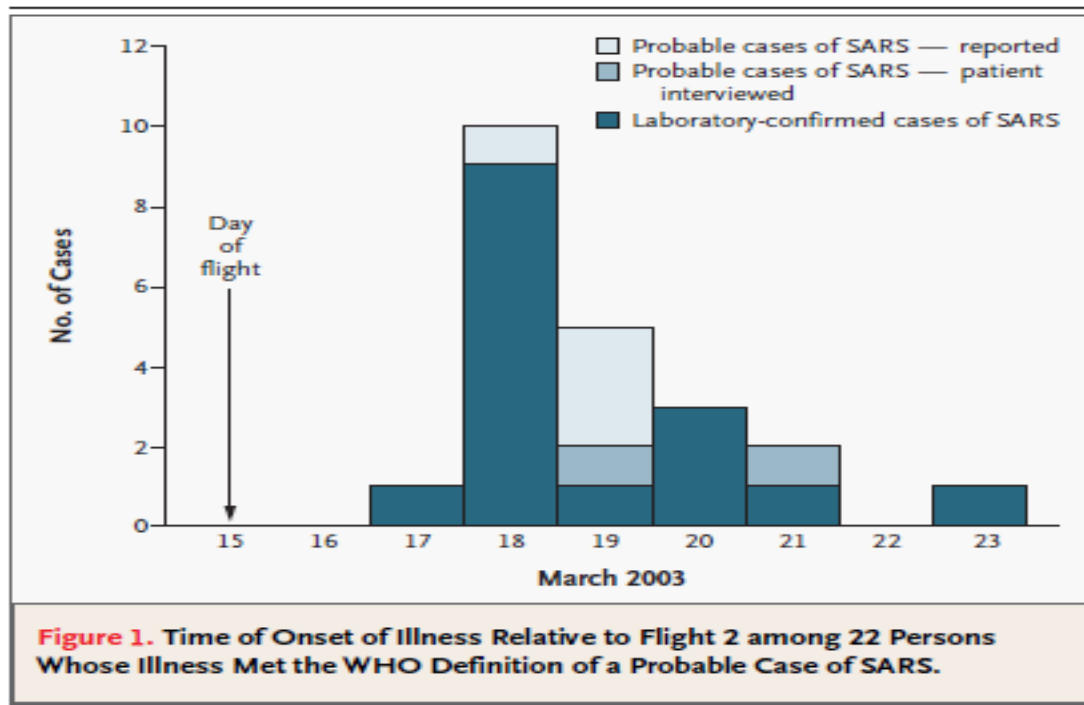
Clinical and Molecular Evidence for Transmission of Novel Influenza A(H1N1/2009) on a Commercial Airplane

PL Ooi, F Lai, CL Low, R Lin, C Wong, M Hibberd, PA Tambyah



Transmission of the Severe Acute Respiratory Syndrome on Aircraft

*S Olsen, HL Chang, T Cheung, A Tang, T Fisk,
PL Ooi, HW Kuo, D Jiang, KT Chen, J Lando, KH Hsu,
TJ Chen, S Dowell*



1. Minimise risk of infection in traveling to ME

- Health advisory for travelers to the ME
 - MOH website
 - Posters at Changi Airport
- Individual Health Advisory Notice for outgoing travelers

Advice before travel

- Consider vaccination against influenza and meningococcus for all, and pneumococcus for those ≥ 65 years or with chronic medical conditions
- While there is NO vaccination against MERS-CoV, vaccinations against influenza and pneumococcus help prevent these infections which have MERS-like symptoms

Advice during travel

- Observe good personal hygiene at all times, and practise frequent hand washing with soap and water
- Avoid close contact with persons suffering from acute respiratory infections
- Avoid contact with camels and other live animals
- Adopt good food safety and hygiene practices

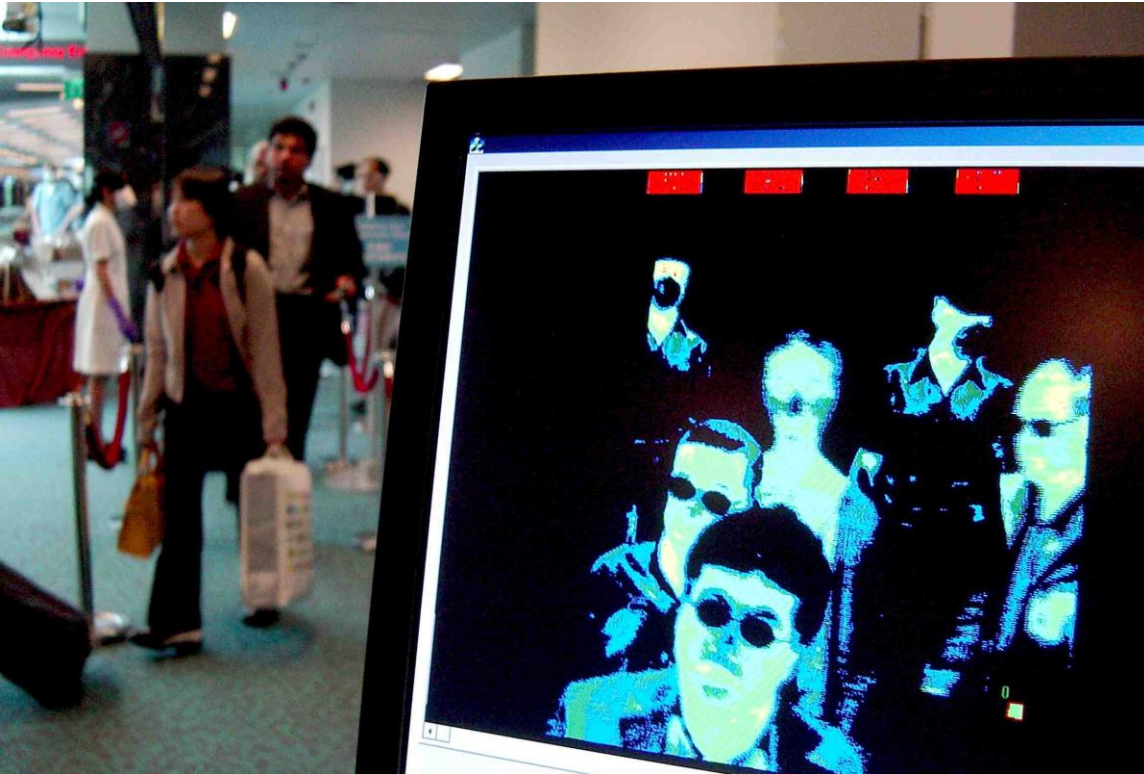
2. Early detection

- Temperature screening at air checkpoints for passengers from affected areas
- All incoming travelers from ME issued Health Advisory Notice at Changi Airport
- Posters advising patients in clinics and hospitals to alert healthcare staff if they are unwell with fever and cough and have recently returned from the ME

Temperature screening

- Febrile passengers will be assessed by on-site doctors
 - Temperature rechecked
 - Travel history, symptoms such as cough
 - Clinical examination for pneumonia
- If fit criteria for suspect case then to transfer to hospital for further assessment and testing
- If not then asked to see his/her GP, and followed up by phone surveillance

Temperature screening



Fever

Normal

Imported cases of MERS-CoV outside Middle East

Country	Onset of symptoms	Date of arrival	Febrile on arrival?	Secondary transmission
UK	24-Jan-13	28-Jan-13	Yes	2 cases (son, a relative visited him at hospital)
France	22-Apr-13	17-Apr-13	No	1 case shared the same ward
Italy	24-May-13	25-May-13	Yes	2 probable cases (one family, one workplace)
Tunisia	3-May-13	25-Apr-13	No	1 case (son)
Spain	15-Oct-13	1-Nov-13	Yes	1 case in same travel group
Malaysia	8-Apr-14	29-Mar-14	No	No
Philippines*	asymptomatic	15-Apr-14	No	No
Greece	8-Apr-14	17-Apr-14	Yes	No
Egypt	22-Apr-14	25-Apr-14	Yes	No
United States	27-Apr-14	24-Apr-14	No	No
United States	30-Apr-14	1-May-14	Yes	No

* The case was a healthcare worker detected in the UAE.

2. Early detection

- Clinics and hospitals maintain high vigilance in looking out for suspect cases of MERS
- The National Public Health Laboratory (NPHL) and our public hospital laboratories have the capability to test for the MERS-CoV virus, and have been doing so
- 48 suspected cases tested in 2014; all negative

Advice to travelers

- Wear a mask and seek medical attention promptly if you become unwell with fever and cough and/or breathlessness while travelling or within 2 weeks after returning to Singapore, and inform the doctor of your travel history

3. Prevent spread

- Suspect cases detected by primary care doctors will be conveyed to hospital via SCDF ambulance
- Processes in all acute hospitals to isolate suspect cases and manage them with appropriate infection control precautions

3. Prevent spread

- In the event of a confirmed index case, contact tracing will be conducted to identify contacts exposed while the index case is symptomatic
- Quarantine Orders (QO) will be served to exposed contacts
- Contacts which are symptomatic will be isolated in hospital for further testing and evaluation

Additional Measures

- All hospitals/doctors apprised of situation, and advised to ensure plans remain relevant in managing suspect and confirmed cases
- MUIS engaged to ensure that health advisories given to all pilgrims
- Stakeholders (ICA, CAG, MPA) updated on operational readiness for border health and quarantine order contingency plans



Thank
You!