Corona Virus in the Kingdom of Saudi Arabia

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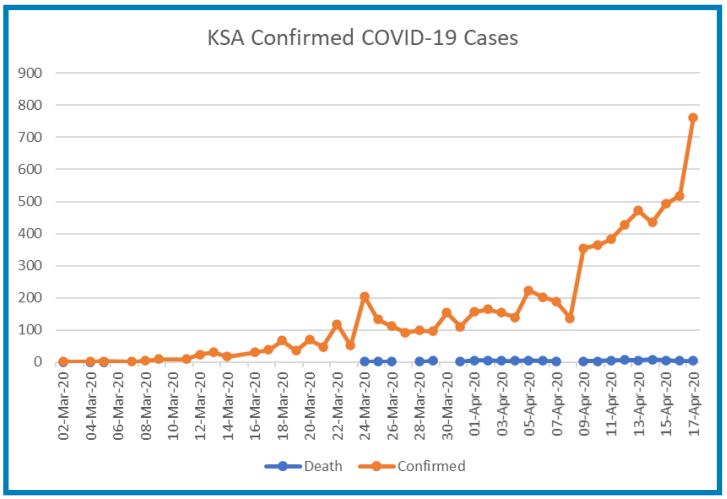
Introduction

Coronaviruses (CoV) are a large family of RNA viruses that cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). The new strain of coronavirus identified in December 2019 in Wuhan City, Hubei, China, has been named by the International Committee on Taxonomy of Viruses (ICTV) as Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2). The ICTV has determined that SARS-CoV-2 is the same species as SARS-CoV but a different strain. The World Health Organization (WHO) has named the disease associated with SARS-CoV-2 infections as Corona Virus Infectious Disease 2019 (COVID-19).

On 30 January 2020, WHO International Health Regulation Emergency Committee declared the disease a Public Health Emergency of International Concern. On 11 March 2020, it was declared a worldwide pandemic.



As of 17 April, there were 2,181,508 confirmed cases across the globe affecting 185 countries with 148,730 global deaths and 558,715 recoveries.

Kingdom of Saudi Arabia (KSA) reported the first patient with COVID-19 on 2 March. The incidence rate is estimated at 200 per 1 million persons with a total of 7,142 confirmed COVID-19 patients, 87 deaths and 1,049 recoveries, while there are 87 critical patients.

As determined and announced by the Ministry of Interior and Ministry of Health (MOH), high risk areas in KSA include Riyadh City, Holy City of Makkah, Madinah City, Jeddah City, Al-Hofuf City, AL-Qatif City and will be updated regularly on this link.

KSA Response to COVID-19

MERS-CoV outbreak emerged in KSA in 2012 and is still circulating in sporadic fashion. It caused multiple nosocomial outbreaks in some Saudi hospitals which has prompted intensive efforts by the Saudi MOH and led to remarkable improvement in infection prevention and control practices across healthcare facilities of the Kingdom.

The first COVID-19 patient in KSA was reported on 2 March. A few days later, the Government of Saudi Arabia took precautionary and strong mitigation strategies to protect citizens and residents in the Kingdom. It also ensured the availability of immediate financial resources which will guarantee all direct preventive measures to limit the spread of the virus and address this pandemic crisis consequences, as well as protect government facilities and agencies and ensure the continuity of their work.

Key Community Containment and Mitigation Measures

- Cancellation of planned events and suspension of events with super-spreader potential.
- Use of social distancing measures to reduce direct and close contact between people in the community.
- Travel restrictions, including reduced flights and public transport and route restrictions without compromising essential services.
- Voluntary home quarantine of members of household contacts.
- Changes to funeral services to minimize crowd size and exposure to body fluids of the deceased.
- Clear communication from national and international health authorities to ensure verified information and avoid fake news, rumours and panic.
- Mass gatherings and events such as citywide festivals, religious gatherings, cultural celebrations, scientific conferences and large political events should be restricted.
- On 27 February, all visits to Mecca and Medina to perform Umrah and visit the holy mosques have been suspended, irrespective of nationality, visa type or residence status.
- Travellers are not permitted entry to the KSA with Umrah visas. Religious gatherings, including daily congregational prayers and Friday weekly congregational prayer in local mosques, have been suspended.

- Temperature screening of all airline passengers was also in effect, with travellers arriving from outside the KSA, including Saudi citizens and residents, being placed in health isolation for 14 days following their arrival.
- All international flights, both incoming and outgoing, were suspended from 15 March. All domestic flights, as well as inter-urban bus, taxi and train transportation, were all suspended beginning on 21 March. On 26 March, travel between regions of the KSA became prohibited.
- All international passenger traffic, whether by air, land or sea, has been suspended. All tourist travel is currently suspended.
- The KSA also suspended operations in many government agencies starting on 16 March. All schools and universities are temporarily closed with distance learning through virtual learning platforms.
  Operation of many markets and malls is suspended; gatherings in parks, beaches and resorts are prohibited. Restaurants are closed except for takeaway services. Pharmacies and grocery stores remain open to serve customers through governmental assigned online delivery applications and systems.
- A nationwide curfew (19.00–06.00) remains in effect for the entire country; the cities of Riyadh, Mecca, and Medina are under a 17.00–06.00 curfew. The curfew remains in effect for 21 days beginning on 23 March with limited exceptions for life and safety. Later on, Saudi Arabia imposed a 24-hour curfew and lockdown on the cities of Riyadh, Tabuk, Dammam, Dhahran and Hofuf and throughout the governorates of Jeddah, Taif, Qatif and Khobar as of 6 April.

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MOH Preparedness

The MOH has National and Regional Command and Control Centers (CCC) (i.e. Incident Command System) to coordinate roles and responsibilities of different entities to expedite real-time response during events. The CCC has activated a COVID-19 preparedness and response plan—it coordinates communications, surveillance, information, resource allocation and educational activities to prevent and control possible COVID-19 events.

A. CCC preparedness and real-time surveillance

National and Regional CCCs oversee the preparedness activities and lead national COVID-19 surveillance through enforcing the existing structure of incident command with relevant stakeholders to achieve unified, consistent and timely actions over a significant period.

- Visual triage for passengers arriving from any country at all points of entry (POE).
- Thermal screening of passengers arriving from any country at all POE.
- Declaration of being in contact with a known case in the last 14 days at all POE.
- Suspected cases must immediately be managed by rapid relief teams and referred to designated hospitals.

A1. Preparedness of Healthcare Facilities

- Risk assessment and gap closure.
- Strengthen all healthcare facilities including the 25 designated hospitals (20 primary and secondary).
- Infection control procedures and visual triage is enforced and monitored in all healthcare facilities.
- Monitor capacity for isolation beds, healthcare workers and critical medical supplies.
- Prepare and disseminate technical guidelines and operational protocols.

A2. Community based preparedness

- Support public places by PPEs capacity.
- CCC have prepared a risk communication plan during different stages of possible outbreak—Communication and Health awareness.
- Designated hotline for public consultations or general questions about the disease.
- Designated hotline for healthcare workers for medical consultations.
- Health awareness on social media, POE and schools.

A3. Response

The CCC commanders are responsible for activating incident command system to coordinate actions of the relevant responders. The main goal of CCC and Regional CCC in response mode:

a. Have real-time information about the outbreak.
b. Manage resources for lab and infection control requirements (acquisitions, tracking and monitoring).
c. Monitor COVID-19 cases in hospitals or household isolation.
d. Plan and operate designated health facilities for the surge.
e. Coordinate all actions between responders and stakeholders.

B. Rapid Response Teams (RRTs)

The public health team or rapid response team (RRT) at regional health affairs (or equivalent body) is responsible for initiating the epidemiological investigation. After activation through regional command and control leaders, the team should complete the epidemiological investigation in both healthcare and community settings using the COVID-19 epidemiological investigation forms. The form includes detailed items such as travel history and possible exposure which needs vigilant history taking and probing. Contacts identification is another important part of the required information (contacts as defined within surveillance case definition paragraph) and then list them for their tracing documentation (contact tracing form).

C. Hospital Level Preparedness

Currently, the MOH designated 25 hospitals for COVID-19 infected patients, amounting to 80,000 hospital beds and 8,000 intensive care unit (ICU) beds. In addition, 2,200 beds have been allocated for isolation of suspected and quarantined cases.

King Fahad Medical City (KFMC)

KFMC is a 1,200 bed tertiary care hospital, the core of the second health cluster in the capital of KSA which serves the population of north and east Riyadh City (population 7.2 million).

COVID-19 Command and Control Center and Task Force in KFMC is a multidisciplinary committee chaired by the CEO of the second cluster who is also the CEO of KFMC. It comprises a wide variety of membership including, but not limited to, executives, infectious diseases (ID) experts, infection control director, emergency physicians, disaster medicine experts, intensive care director, supply chain leaders, hospital operations, in addition to representatives from MOH and CCC.

The role of ID physicians in KFMC

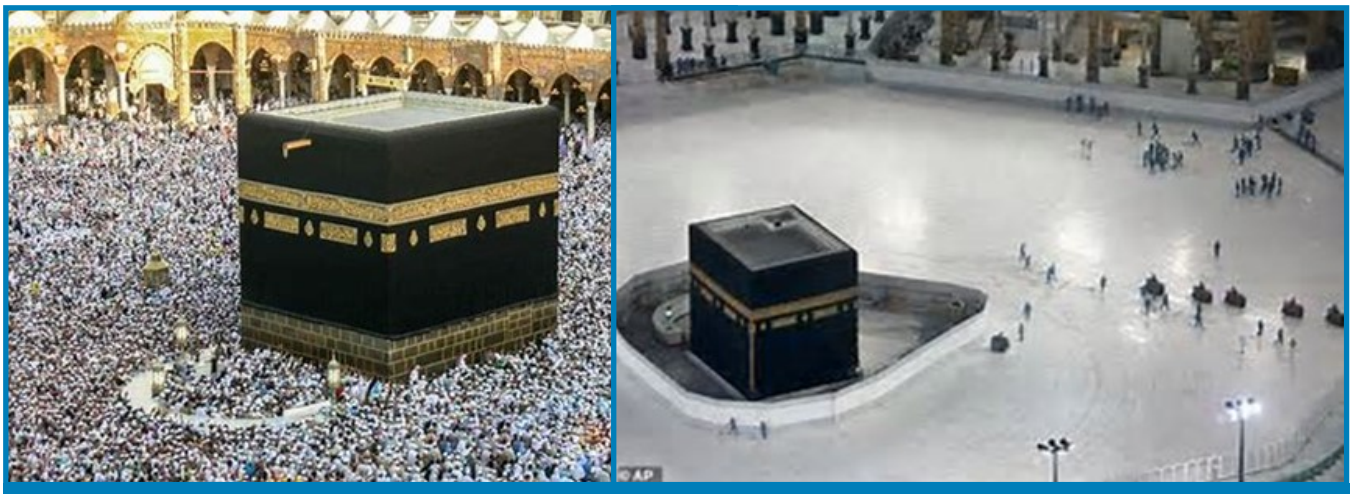
1. After emergency department (ED) staff have applied the visual triage on patients, if they scored high as per MOH COVID-19 case definition, ED refers patients to ID after taking the first nasopharyngeal swab for SARS-CoV-2 polymerase chain reaction (PCR). ID evaluate patients and request the necessary lab testing and imaging and follow the result of PCR. If the first swab is negative and clinical suspicion is still high, a second swab is taken and the patient is moved to a COVID-19 dedicated inpatient ward.
2. Regular rounds on ICU and COVID-19 dedicated wards to evaluate every patient and support internists who admit COVID-19 patients. We, as ID physicians, advise the line of management and decision to stop isolation and approve patients' discharge from the hospital.
3. Contribute to the establishment and update of COVID-19 clinical management guidelines.
4. Respond to all calls and queries raised by healthcare providers and infection control professionals.
5. Collaborate in research proposals with scientists and clinicians.

References

1. Saudi Ministry of Health Coronavirus Disease 19 (COVID-19) Guidelines March 2020 V1.2
2. Saudi Center for Disease Prevention and Control: Daily status report of confirmed case in KSA
3. Barry M *et al.* Coronavirus Disease 2019 (COVID-19) Pandemic in the Kingdom of Saudi Arabia: Mitigation Measures and Hospitals Preparedness. *Journal of Nature and Science of Medicine*. 2020

World Health Organization: East Mediterranean (EMRO) situation report as of 17th April 2020

Countries	Total	Recovered	Death	CRF
EMRO	116,220	59961	5667	4.9
KSA	7142	1049	87	1.3



The grand holy mosque of Makkah before and after COVID-19 mitigation measures