

**Preparedness Plan for
The Middle East Respiratory Syndrome (MERS)
The Government of the Hong Kong Special Administrative Region
(2014)**

A. Introduction

Human case of the Middle East Respiratory Syndrome (MERS) was first confirmed in laboratory outside Hong Kong in September 2012. According to the World Health Organization (WHO), the novel coronavirus causing MERS, i.e. MERS coronavirus, has not been previously identified in humans. Globally, the case fatality rate of cases reported to the WHO (as of May 2014) was about 30%. Among the confirmed cases with details released by WHO (as of May 2014), about 73% presented with relatively more severe illnesses such as pneumonia and about 10% had mild illnesses such as influenza-like illness, while the remaining 17% were reported to be asymptomatic. Patients with underlying co-morbidities had a high risk of severe disease due to MERS coronavirus infection. Person-to-person transmission has occurred in many clusters, either in households, work environments or healthcare settings. The virus also appears to pass from an infected person to another person in close contact. This has been seen among family members, patients and health-care workers. Besides, scientific studies supported the premise that camels serve as the primary source of MERS coronavirus infecting humans.

2. This document sets out the Hong Kong Special Administrative Region Government's preparedness and response plan in case of an outbreak of MERS. It defines the response level and the corresponding command structure to be set up, at each response level. A three tier response level is used which is in line with the "Preparedness Plan for Influenza Pandemic (2012)". Relevant agencies, companies and organisations especially those involving in the care of vulnerable groups such as the elderly or children, should take note of this plan in devising their contingency plans and response measures.

3. This plan includes the following key features –
- three response levels, each representing a graded risk of the disease affecting Hong Kong and its health impact on the community;
 - example(s) of possible scenario depicting each response level; and
 - the activation and the standing down mechanism and response measures for each response level.

B. Government's Response Levels

4. This plan includes three response levels – Alert, Serious and Emergency. These response levels are based on risk assessment of MERS that may affect Hong Kong and its health impact on the community. Key factors to be considered in the risk assessment include –

- transmissibility of the disease, such as its mode of transmission, effectiveness of transmission between reservoirs-to-human or human-to-human, capability of sustaining community level outbreaks;
- geographical spread of MERS coronavirus in humans, animals, such as the global distribution of affected areas, the volume of trade and travel between the affected areas and Hong Kong;
- clinical severity of the disease, such as serious complications, hospitalisations and deaths;
- vulnerability of the population, including pre-existing immunity, target groups with higher attack rates or increased risk of serious illness;
- availability of preventive measures, such as vaccine and possible treatments; and
- recommendations by international health authorities, such as WHO.

5. It should be noted that facts and knowledge on MERS available are still limited. There are still uncertainties in the exact mode of transmission. According to WHO, the majority of the cases reported since mid-March 2014 have likely acquired infection through human-to-human transmission and only about a quarter are considered as primary cases, which suggests slightly more human-to-human transmission than previously observed. The overall case fatality ratio is 30%. The virus appears to cause more severe disease in people with weakened immune systems, older people, and those with such chronic diseases as diabetes, cancer, and chronic lung disease. The epidemiological picture is still evolving. As the situation evolves, crucial information to support assessment of the aforementioned factors, such as animal reservoir, complication rate, reproductive number and other transmission characteristics, will gradually come to light. The risk will be assessed and reviewed from time to time, having regard to the development of scientific knowledge and evolving situation, to ensure that the appropriate response level is activated and corresponding measures are adopted. For example, some studies supported the premise that camels are a likely source of infection in humans and the public are advised to avoid visiting farms, barn areas or market environments where camels are present and avoid contact with animals especially camels during travel.

Alert Response Level

6. Alert Response Level corresponds to a situation where the risk of MERS causing new and serious health impact in Hong Kong is **low**. Generally, it depicts the existence of MERS coronavirus capable of causing serious health outcome in humans in places outside Hong Kong and the transmissibility to human has not been sufficient to sustain community level outbreaks. An example of scenario under this level includes the following –

- confirmation of sporadic or clusters of human case(s) caused by MERS coronavirus in areas outside Hong Kong, which the transmissibility to human has not been sufficient to sustain community level outbreaks.

7. The Secretary for Food and Health (SFH) may activate or stand down this response level upon the advice of the Director of Health (DoH).

8. DoH will consider the key factors mentioned in paragraph 4 in conducting the risk assessment for formulation of the advice.

Serious Response Level

9. Serious Response Level corresponds to a situation where the risk of MERS causing new and serious impact to human health in Hong Kong is **moderate**. Generally, it depicts a moderate risk of local spread of the disease in Hong Kong. Examples of scenarios under this level include the following –

- confirmation of sporadic or a few small clusters of human case(s) caused by a MERS coronavirus in Hong Kong but without sustained human-to-human transmission;

- confirmation of MERS capable of efficient human-to-human transmission, spreading in an area that has insignificant trade and travel relationship with Hong Kong.

10. SFH may activate or stand down this response level upon the advice of DoH.

11. DoH will consider the key factors mentioned in paragraph 4 in conducting the risk assessment for formulation of the advice.

Emergency Response Level

12. Emergency Response Level corresponds to a situation where the risk of MERS causing new and serious impact to human health in Hong Kong is **high and imminent**. Generally, it depicts a high risk of community-wide transmission of the virus in Hong Kong. An example of a scenario under this level is MERS infection locally acquired in Hong Kong or in a place with considerable level of trade and travel relationship with Hong Kong and with evidence of human-to-human transmission sufficient to cause sustained community level outbreaks.

13. The Chief Executive (CE) or a delegate may activate or direct stand down from this response level upon the advice of SFH. DoH will consider the key factors mentioned in paragraph 4 in conducting the risk assessment to support SFH in the formulation of advice.

Adjustment of Response Levels

14. Information about the emergence of MERS coronavirus is likely to be scarce during the initial stages of a MERS outbreak. Risk assessment under these circumstances requires flexibility and possibly erring on the side of caution. The response level will be suitably adjusted when better risk assessment can be made in light of more available information.

C. Command Structure

Alert Response Level

15. At the Alert Response Level, a simplified response command structure will be put in place. The Food and Health Bureau (FHB) will coordinate and steer Government response with the following as the main parties assessing the nature and level of risks –

- Department of Health (DH); and
- Hospital Authority (HA).

Serious Response Level

16. At the Serious Response Level, a Steering Committee chaired by SFH will be set up to coordinate and steer Government response with FHB providing secretariat support.

17. As the situation warrants, the Steering Committee may comprise the following as its core members –

- Permanent Secretary for Food and Health (Food);
- Permanent Secretary for Food and Health (Health);
- Under Secretary for Food and Health;
- Permanent Secretary for Commerce and Economic Development (Commerce, Industry and Tourism);
- Permanent Secretary for Education;
- Permanent Secretary for Security;
- Director of Agriculture, Fisheries and Conservation;
- Director of Food and Environmental Hygiene;
- DoH;
- Director of Home Affairs;
- Director of Information Services;

- Director of Leisure and Cultural Services;
- Director of Social Welfare;
- Controller, Centre for Health Protection (CHP);
- Commissioner for Tourism; and
- Chief Executive of HA.

18. The Steering Committee will co-opt other senior officials and non-Government experts as circumstances warrant. Members may send their representatives to attend the meetings as appropriate.

Emergency Response Level

19. At the Emergency Response Level, the Steering Committee will be chaired by the CE with FHB providing secretariat support.

20. As the situation warrants, the Steering Committee may comprise the following as its core members –

- Chief Secretary for Administration;
- Financial Secretary;
- Secretary for Justice;
- Director, CE's Office;
- All secretaries of bureaux;
- DoH;
- Director of Information Services;
- Controller, CHP; and
- Chief Executive of HA.

21. The Steering Committee may co-opt other senior officials and non-Government experts as members. Members may send their representatives to attend Steering Committee meetings as circumstances warrant.

22. Sub-committees chaired by SFH may be set up under the Steering Committee as appropriate, to look after operational matters and specific issues and to make recommendations to the Steering Committee. Representatives from DH and HA should be the core members of the sub-committees. SFH may invite members from relevant bureaux / departments and non-Government experts to join the sub-committees.

D. Response Measures for a MERS Outbreak

23. Response measures for a MERS outbreak would include the following key areas –

- Surveillance;
- Investigation and control measures;
- Laboratory support;
- Infection control measures;
- Provision of medical services;
- Review recommendations on use of vaccines and / or medication if available;
- Port health measures; and
- Communication.

Alert Response Level

24. The following actions will be taken at Alert Response Level –

24.1 Surveillance

- MERS has been designated as a notifiable disease; and MERS coronavirus has been designated as scheduled infectious agents in Hong Kong under the Prevention and Control of Disease Ordinance (Cap. 599). All medical practitioners are required to report any suspected or confirmed cases to DH.

- DH will –
 - Maintain communication with WHO and other international health authorities to obtain timely and accurate MERS information from places outside Hong Kong.
 - Conduct media / rumours surveillance to monitor the local and global situation.
 - Keep in view any new surveillance definitions and / or recommendations issued by WHO and modify local surveillance activities accordingly.
 - Work with HA and private hospitals to enhance other surveillance activities on MERS whenever necessary.
 - Keep in touch with the health authorities of Guangdong, Macau and the National Health and Family Planning Commission of China (NHFPC) and exchange information on unusual patterns of infectious diseases with Guangdong and Macao health authorities on an ad-hoc basis.

24.2 Investigation and control measures

- DH will conduct epidemiological investigation and trace contacts of suspected cases of MERS.

- DH and the Leisure and Cultural Services Department (LCSD) will prepare and be ready to convert suitable holiday camps into quarantine centres.

24.3 *Laboratory support*

- DH will –
 - Conduct laboratory testing for rapid detection of MERS coronavirus on specimens from any suspected human cases.
 - Review laboratory diagnosis strategy and enhance capacity in laboratory diagnostic services, with stockpile of necessary reagents.
 - Conduct virus characterisation for any positive cases.
 - Liaise with the HA's Laboratory Network on diagnostic criteria and transfer rapid test technology to HA as necessary.
 - Provide confirmatory testing for MERS coronavirus and strengthen liaison with HA and private hospitals to enhance laboratory surveillance on MERS coronavirus whenever appropriate.
 - Strengthen liaison with overseas counterparts to obtain updated information.

24.4 *Infection control measures*

- DH will –
 - Issue guidelines and health advice to residential institutions, schools and the general public, with the support of Education Bureau (EDB) and Social Welfare Department (SWD).
 - Update healthcare workers' knowledge on infection control measures for MERS.
 - Arrange briefings for government departments on the infection control guidelines and the proper use of personal protective equipment (PPE).

- DH and HA will review and promulgate enhanced infection control measures where necessary.
- DH, SWD and HA will inspect and review stock of PPE.

24.5 *Provision of medical services*

- HA will –
 - Formulate clinical management guideline on MERS and community acquired pneumonia.
 - Monitor daily bed occupancy, and review bed mobilisation and compliance with admission guidelines. Assess and plan for scaling down non-emergency activities.

24.6 *Vaccination and medication*

- DH will liaise with WHO and relevant experts on latest development and recommendations on vaccines and / or medications whenever necessary.

24.7 *Port health measures*

- DH will –
 - Enhance dissemination of health message to travellers (e.g. in-flight broadcast, distribution of leaflets, promulgating travel health news on its website and using posters).
 - Assess inbound travellers with fever or other symptoms of the infection at border control points (BCP).
 - Refer suspected cases of MERS to HA for further management.
 - Closely follow the latest situation overseas and WHO's recommendation on port health measures.
 - Keep the travel sectors and BCP stakeholders updated of the disease situation.

24.8 *Communication*

- DH will –
 - Continue to keep local stakeholders (e.g. doctors, private hospitals, Chinese Medicine Practitioners, schools, ethnic groups etc.) and the general public informed of latest developments using a variety of platforms such as the CHP website and the Health Education Hotline.
 - Liaise with other Government bureaux / departments to gear up necessary preparation.
 - Maintain close liaison with overseas healthcare authorities and WHO to obtain latest information and expert advice (e.g. travel advice).
 - Provide materials to inform doctors, dentists, other health care professionals, private hospitals and institutions and the public of the latest situation.
 - Maintain close contact with the health authorities of Guangdong, Macau and the NHFPC to monitor possible MERS cases occurring in the region.
 - Disseminate information and step up health advice to public through various means including press releases, pamphlets, posters, announcements in the public interest, website, and education hotline and incorporate health messages in ongoing health education activities.
 - Send letters to medical laboratory sector regarding amendment of Schedule 2 of Cap. 599 to include the agent in the Schedule.
- HA will promulgate health advice to clients.
- Home Affairs Department (HAD) will gauge community concern with regard to the local situation.
- EDB will disseminate information to schools on preventing the spread of MERS in the premises.

- SWD will disseminate information to child care centres, residential care homes for the elderly and persons with disabilities, drug treatment and rehabilitation centres on preventing the spread of MERS in the centres.
- Inform SB about the locality of outbreaks of MERS outside Hong Kong having regard to advice of WHO for consideration of issuing travel advice or warning.

Serious Response Level

25. In addition to the actions taken at Alert Response Level, the following activities will be carried out at Serious Response Level –

25.1 Surveillance

- DH will –
 - Notify WHO of any cases in Hong Kong, in accordance with International Health Regulations (2005).
 - Activate electronic platform for MERS coronavirus (“eMERS”) with HA to ensure timely monitoring of cases and contacts.
 - Liaise with HA’s information technology team on the updates of information systems for MERS as necessary.
 - Work with HA to review surveillance criteria.
 - Further enhance surveillance activities, including zero reporting from the public and private hospitals on cases of severe respiratory disease suspected to be due to MERS coronavirus.
 - Liaise with private hospitals to step up surveillance and reporting of MERS coronavirus, and give advice on infection control based on guidelines issued by the CHP.

- Closely monitor the risk assessment and advice from WHO and the overseas situation for the possibility of sustained human to human transmission.

25.2 *Investigation and control measures*

- DH will –
 - Conduct epidemiological investigation and contact tracing as appropriate.
 - Put contacts under medical surveillance and / or quarantine as appropriate.
 - Liaise with the Police to prepare for the activation of the “Major Incident Investigation and Disaster Support System” (MIIDSS) if necessary.
 - Obtain advice from WHO and collaborate with local academics to conduct special studies as necessary.
 - Liaise with Food and Environmental Hygiene Department (FEHD) / Housing Department / building management to carry out disinfection of the building where the case resided.
 - Activate the Multi-disciplinary Response Team to conduct environmental investigation as necessary.
 - Liaise with LCSD for immediate conversion of designated holiday camps into quarantine centres, if such decision is made, and set up a Task Force on Camp Confinement to support the operation of the quarantine camp(s) and collate relevant statistics on camp confinees.
- HAD will assist in the implementation of quarantine / relief measures in cooperation / coordination with DH and SWD as appropriate.
- Relevant bureaux / departments to disseminate messages to frontline staff and activate respective departmental contingency plans (e.g. adequate supplies) wherever appropriate.

25.3 *Laboratory support*

- DH will –
 - Conduct rapid testing on suspected cases of MERS.
 - Maintain liaison between the Public Health Laboratory Centre and HA's Laboratory Network on diagnostic criteria and share technology with HA.
 - Perform MERS coronavirus specific serology testing on need basis.
 - Conduct virus characterization / gene sequencing studies on MERS coronavirus isolates / positive specimens.
 - Liaise with WHO for further viral analysis and comparison and discuss on diagnostic development as appropriate.
- DH and HA will increase laboratory capacity for rapid testing to assist diagnosis.

25.4 *Infection control measures*

- DH and HA will –
 - Review stock of PPE.
 - Enhance and / or review infection control measures according to the latest knowledge on the transmission route of MERS coronavirus.
- HA will review visiting policy in its hospitals.

25.5 *Provision of medical services*

- HA will –
 - Consider setting up designated clinics and protocol for triaging patients with relevant symptoms at primary care level.
 - Isolate and treat confirmed cases in designated hospitals.

- Update / revise clinical guidelines on management and related admission criteria for various specialties. Further reduce non-urgent and non-emergency services where necessary.
- In collaboration with DH, will provide the situation update to private sectors and start discussion with private hospitals on patients transfer / diversion.

25.6 *Vaccination and Medication*

- DH will liaise with WHO and relevant experts on the latest development and recommendations on the use of vaccines and / or medications whenever necessary.

25.7 *Port health measures*

- DH will –
 - Review and modify existing port health measures and enact legislation, where necessary, in light of WHO latest guidelines / recommendations.
 - Assist retrieval of flight manifests from airlines to facilitate tracing of flight contacts.
 - Keep in view WHO's latest recommendations on port health measures, including measures to prevent exportation of cases from Hong Kong.

25.8 *Communication*

- DH will activate relevant centres (e.g. Emergency Response Centre, Outbreak Intelligence Centre and Emergency Hotline Centre) for information, monitoring and response, if necessary.
- HA will activate Major Incident Control Centre for information, monitoring and response, if necessary.

- DH will communicate with and disseminate information to hospitals, medical professionals in the private and public sectors and other healthcare workers.
- Public communication will be strengthened –
 - DH and HAD will set up a telephone hotline as required, such as in the case of home quarantine.
 - FHB and DH will conduct regular briefings to the press and legislators.
 - HAD will help disseminate information to public through District Offices network.
- DH will also –
 - Together with HA, educate the public on use of PPE and practices.
 - Together with HAD, monitor community response and concerns.
 - Brief consulates and relevant businesses about the local situation.
 - Liaise with WHO, Mainland authorities (such as NHFPC and the General Administration of Quality Supervision, Inspection and Quarantine), Macao and other health authorities on the local situation.
 - Liaise with WHO on international practice regarding travel advice and stay alert of possible travel advisories. Inform respective consulate should a tourist become a suspected / confirmed case in Hong Kong.
 - Update the public and the media on the global and local situations.
 - Update guidelines and arrange briefings and community education activities to various community sectors (e.g. District Councils).
 - Update information of MERS on the 24-hour DH Health Education Hotline.

25.9 *Other measures*

- SWD will provide relief measures, counselling services and temporary residential placement for needy persons.

Emergency Response Level

26. In addition to the actions taken at Serious Response Level, the following activities will be carried out at Emergency Response Level –

26.1 *Surveillance*

- DH will –
 - Monitor daily the number of detections of MERS coronavirus from Public Health Laboratory Services Branch of the CHP.
 - Together with HA, monitor daily number of patients seen at Accident & Emergency Departments of hospitals and hospital admissions due to MERS or relevant symptoms.
 - Together with HA, adjust surveillance mechanisms with reference to the latest recommendation(s) of the WHO.

26.2 *Investigation and control measures*

- DH will –
 - Assess the state of disease spread and potential for pandemicity jointly with WHO and relevant experts, where appropriate.
 - Conduct epidemiological studies to look into community sources and transmission of infection. Any suspected community sources will be thoroughly investigated.

- Seek advice from Department of Justice, when necessary, on the legal authorities for implementation of the enhanced measures and on acquiring emergency public health power to enable enforcement of the control measures.
 - Work with MIIDSS to collect epidemiological data.
 - Closely liaise with relevant parties on the need to remove residents from affected premises that environmental factors are suspected to play a significant role in the transmission of the disease to quarantine centre(s) and arrange with related departments accordingly if such decision is made.
- FHB and DH will enact legislation as appropriate to enable enforcement of control measures.

26.3 *Laboratory support*

- DH will –
 - Conduct virus detection and characterisation.
 - Perform antiviral resistance and vaccine immunogenicity study as available and appropriate.

26.4 *Infection control measures*

- HA will mobilise the PPE stockpile.

26.5 *Provision of medical services*

- HA will –
 - Mobilise the capacity of isolation beds and management of confirmed and suspected cases.
 - Monitor closely the territory-wide utilisation of public hospital services and further re-organise or reduce non-urgent services to meet the surge in workload due to MERS.

- Mobilise convalescent hospitals / wards to increase capacity to treat acute cases.
- Review and promulgate updated guidelines and protocols on diagnosis, treatment and admission criteria.
- DH and HA will review and update protocols on research projects in collaboration with academia, private sectors and international organisations, if necessary.
- DH and HA will reprioritise its non-urgent and non-essential services.

26.6 *Vaccination and medication*

- DH will liaise with WHO and relevant experts on the latest development and recommendations on the use of vaccines and / or medication whenever necessary.

26.7 *Port health measures*

- DH will –
 - Subject to the recommendation of WHO, require transit passengers to have their body temperature screened.
 - Subject to the recommendation of WHO, conduct temperature screening for outbound travellers to prevent exportation of disease via international travel.

26.8 *Communication*

- DH will –
 - Provide daily update of the course of the epidemic and governmental response plans and actions.
 - Step up public education on use of PPE and practices.
 - Educate the public regarding self-management of relevant symptoms and when and how to seek treatment.

- Contact WHO on the subject of possible travel advisory against Hong Kong.
 - Prepare material to provide clear guidance on extra preventive measures to be taken and inform doctors, dentists, other health care professionals, private hospitals, institutions, tourist agencies, and the public of such measures.
 - Update other government departments of the updated situation.
 - Engage community non-governmental organisations and professional groups as partners in risk communication and health education.
- HA will communicate closely with private health sector for sharing of expertise and workload.
 - FHB will facilitate the steering and implementation of a joint Government public relations strategy.

26.9 *Other Measures*

- DH, EDB and LCSD will assess the need for closure of schools, public places, stopping public gatherings and curtailing non-essential activities and services.
- FEHD will prepare for the 24-hour operation of the six crematoria.
- FHB will prompt all Government agencies to respond according to their respective contingency plans.

27. The actions to be taken at Emergency Response Level will be reviewed and the strategy revised as appropriate to ensure the most efficient use of health resources. As the situation evolves to become an epidemic with multiple community outbreaks and a high attack rate in the population, containment strategies may become no longer effective in stopping disease spread. There may be a heavy burden of excessive morbidity and mortality overwhelming the healthcare system; a shortage of medical supplies; and territory-wide infrastructures (including transportation, utilities, commerce and public safety) may be disrupted. The purpose of emergency response at this stage will be to slow down progression of the epidemic and minimise the loss of human lives, in order to buy time for the production of an effective vaccine against the virus strain (i.e. mitigation). Specifically, surveillance activities will be limited to essential elements. Case investigation and quarantine measures will be scaled down or abolished. Confirmatory testing will not need to be performed on all patients with symptoms of MERS. Antigenic analysis will be carried out on all isolates while gene sequencing will be performed for selected isolates.

Food and Health Bureau
Department of Health
Centre for Health Protection
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List of Abbreviations

BCP	Boundary Control Points
CE	Chief Executive
CHP	Centre for Health Protection
DH	Department of Health
DoH	Director of Health
EDB	Education Bureau
FEHD	Food and Environmental Hygiene Department
FHB	Food and Health Bureau
HA	Hospital Authority
HAD	Home Affairs Department
LCSD	Leisure and Cultural Services Department
MERS	Middle East Respiratory Syndrome
MIIDSS	Major Incident Investigation and Disaster Support System
NHFPC	National Health and Family Planning Commission of China
PPE	Personal Protective Equipment
SB	Security Bureau
SFH	Secretary for Food and Health
SWD	Social Welfare Department
WHO	World Health Organization