Infection Control & Hospital Epidemiology (ICHE)

EPIDEMIC PLAN

2nd Edition November 2015
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Abbreviations
AIIR: Airborne Infection Isolation Room
AGP: Aerosol Generating Procedure
CEO: Chief Executive Officer
COO: Chief Operating Officer
DEM: Department of Emergency Medicine
EOC: Environment of Care
EPRI: Epidemic Pandemic Respiratory Illness
EVD: Ebola Virus Disease
FM: Department of Family Medicine
ICHE: Infection Control and Hospital Epidemiology - Riyadh
HCW: Healthcare Worker
HHC: Home Health Care
KFSH&RC: King Faisal Specialist Hospital & Research Centre
MCA: Medical and Clinical Affairs
MOH: Ministry of Health
MOO: Medical Operating Officer
MTB: Mycobacterium Tuberculosis
PAPR: Powered Air Purifying Respirator
PPE: Personal Protective Equipment
WHO: World Health Organization

Definitions
Epidemic: An illness that affects a large population in one geographic area, with rapid spread and is not seasonal.
Pandemic: An epidemic that has become global.
Risk Mitigation: Specific measures introduced to minimize or eliminate unacceptable risks
Worried Well: People who do not need medical treatment, but seek medical care to be reassured, or for emotional problems

Purpose
This document applies to KFSH&RC (Gen. Org) – Riyadh site and describes the ICHE strategic approach and preparations for an epidemic and/or pandemic. It provides a general framework for assessing, planning, response, and recovery of services provided, and outlines role identification and responsibilities.

Aim is to:
1. To maximize patient, family, and HCW health and safety.
2. To create a culture of infection control and prevention in the workplace.
3. To provide appropriate infection control and prevention recommendations during EPRI events.
4. To reduce HCW risk of infection and transmission.
5. Establish contingency plans to maintain delivery of services during times of significant and sustained worker absenteeism.
6. Establish prompt communications with departments to provide mutual support and maintenance of essential
services.

**Introduction**
The Epidemic Plan, is a decision-making plan for responding to an influx of infectious patients resulting from an epidemic or pandemic event. It is well documented that an infectious disease disaster can have a major impact on morbidity, mortality and healthcare costs. Therefore, it is of paramount importance that ICHE develop a plan for assessment, planning, response, and recovery decisions to minimize these risks.

This document uses the term epidemic synonymously with pandemic and any other adverse event which may result in an influx of patients with the potential to spread infectious diseases. In addition, this document should be read in conjunction with the MERS CoV/EPRI flow charts (Appendix 1 to 4), specific epidemic pathogen plans (Appendix 5 and 6) and key ICHE policies (e.g. MCO-MC-INF-04-062 Epidemiologic Investigation of a Suspected epidemic/Outbreak). Review of the plan shall be undertaken at regular intervals, at least every three (3) years and ad hoc e.g. post an epidemic plan audit.

The Epidemic Plan is designed to assist the Epidemic Task Force in managing an EPRI within KFSH&RC-Riyadh and includes an overview of infection prevention and control activities and practices that will be critical to minimize transmission. It is recognized that certain recommendations may be feasible only within the early phases of an epidemic and may not be achievable as the epidemic spreads and resources become scarce.

Furthermore, the CDC (2009) advised businesses to plan for up to 40% of staff absenteeism for a period of about two weeks during the peak pandemic periods and lower levels of staff absence either side of the peak. Therefore, epidemic planning includes staff preventative measures such as immunization, appropriate use of PPE, and segregation of symptomatic patients. As epidemics are unpredictable procedures for prevention are included as part of the planning process, so that potential risks have an appropriate risk mitigation strategy.

**Part A:** Describes the foundation to develop an infection control plan for the management of an epidemic with particular focus on plan activation, formulation of the epidemic taskforce, department of ICHE-Riyadh responsibilities, assessment and planning frameworks.

**Part B:** Describes the infection control management framework for response and recovery of an epidemic. This plan and its attachments will be reviewed annually and updated every three years or as needed. The responsibility for updating this document lies with the ICHE-Riyadh.

**Mode of EPRI Transmission**
Organisms, especially respiratory viruses are expelled in large droplets and remain viable in droplets that settle on objects within the patient’s immediate environment. Both *Influenza A* and *B* and other influenza-like viruses have been shown to survive on hard, non-porous surfaces for twenty-four (24) to forty-eight (48) hours, on cloth paper and tissue for eight (8) to twelve (12) hours, and on hands for up to five (5) minutes. Contact with respiratory secretions and large droplets appears to account for the majority of *Influenza* and influenza-like virus transmission.
Standard Precautions
During an influx of infectious patients with EPRI, adherence to infection prevention and control policies and procedures is critical to minimizing the transmission of infectious diseases. Strict adherence to hand washing/rub recommendations is the cornerstone of infection prevention and in certain circumstances this may be the only preventive measure available during an EPRI.

Standard Precautions are utilized for routine care of all patients and include the following interventions:
• Hand washing before and after caring for patients in accordance with WHO 5 moments for hand hygiene
• PPE use when splashes or sprays of blood, body fluids, secretions or excretions are possible i.e. gloves, masks, eye protection, face shields, and gowns.
• Cleaning of patient-care equipment, the patient’s physical environment and soiled linen
• Precautions to reduce the possibility of HCW exposure to blood borne pathogens
• Appropriate patient placement
• Respiratory and cough etiquette

Transmission Based Precautions

Droplet and Contact Transmission Based Precautions:
• All patients with febrile respiratory illness to be placed on droplet and contact precautions
• All patients to be given a surgical mask to wear in waiting areas or during transportation
• Prompt isolation in a single room, if possible otherwise maintain at least one meter (3 feet) between patients in waiting areas or other public places
• A surgical mask covering the HCW mouth and nose when providing direct care within one meter (3 feet) of a patient displaying EPRI symptoms
• Protective eyewear when providing direct care within one meter (3 feet) of the patient
• Non sterile long sleeved gowns during procedures and patient care activities especially where uniform contamination is anticipated
• Gloves when HCW is likely to have contact with body fluids or contaminates surfaces/equipment
• Hand hygiene to be performed as per the WHO 5 Moments for Hand Hygiene, and after PPE removal
  1. Before patient contact
  2. Before clean/aseptic procedures
  3. After contact with blood/body fluids
  4. After patient contact
  5. After contact with patients surroundings

Airborne and Contact Transmission Based Precautions:
• For patients requiring AGPs (AGP include endotracheal intubation, open suctioning, resuscitation, sputum induction, tracheostomy, bronchoscopy, autopsy)
• Patient suspected of MERS-CoV (see MERS-CoV pathogen specific epidemic plan, Appendix 4)
• Patient suspected of EVD (see EVD pathogen specific epidemic plan, Appendix 5)
• Signs and symptoms suspicious of MTB
• AIIR (negative pressure room with a minimum of 12 air changes per hour) is required
• Door to the AIIR room to remain closed at all times
• All HCWs to wear a particulate respirator (e.g. N95) of which they have been fit tested and approved for
• A fit check is to be done at each time of donning
• A PAPR may be worn if applicable
• Particulate respirator shall be a single use/single patient item
• Protective eyewear required e.g. disposable goggles, face shield
• Non sterile long sleeved gown required
• Gloves required
• Hand hygiene to be performed as per the WHO 5 Moments for Hand Hygiene and after PPE removal
• Particulate respirator shall be removed outside the room

**Key ICHE Policies**
1. MCO-MC-INF-04-62: Epidemiologic investigation of a suspected epidemic/outbreak
2. MCO-MC-INF-04-011: Standard and Transmission-Based Precautions
3. MCO-MC-INF-04-078: Infection Control Policy for the Control and Management of Febrile Respiratory Illness (FRI)/Severe Acute Respiratory Illness (SARI)
4. MCO-MC-INF-04-038: Summary of Work Restrictions for Healthcare Personnel
5. MCO-MC-INF-04-042: Influenza Vaccination of Health Care Workers
6. MCO-MC-INF-04-021: Medical Waste Policy
7. MCO-MC-INF-04-027: Hand Hygiene Procedures
8. MCI-MC-INF-04-010: Reporting notifiable diseases to the MOH
9. MCO-MC-INF-04-077: MERS-CoV
10. MCO-MC-INF-04-079: Management of Ebola Virus and Viral Hemorrhage Fevers

**PART A**

**Epidemic Plan Activation**
The Epidemic Plan activation shall occur by phone/email if one of the following occurs:
Once one or more of the identified triggers have been activated, the Director of ICHE-Riyadh for decision making and assessment will meet with the ICHE team and if required other relevant personnel to assess the situation and gather necessary information. If the assessment of the Director of ICHE meets the epidemic plan activation criterion, the Director ICHE or his/her designee will activate the epidemic plan which includes formation of the Epidemic Taskforce.

Communication is a core component in planning and managing any infectious disease epidemic. Accurate and timely information dissemination at all stages and levels is crucial to minimizing unforeseen disruption to the institution and to maximize the effectiveness of the response.

Communication delivery methods include:
- Phone
- Email
- Meeting minutes
- General Distribution documents
- Enterprise Correspondence memos

Reports shall be distributed to all key stakeholders as required, e.g. interim report, upon conclusion.

**Epidemic Taskforce**

Epidemic Taskforce membership shall include Infection Control Committee membership representation, MCA/MOO, and other key stakeholders and/or unit Directors as required. The initiation and development of the appropriate action plan shall be overseen by the Director of ICHE or designee. Core members of an Epidemic Plan Taskforce are as follows and contact details shall be kept updated in ICHE:

<table>
<thead>
<tr>
<th>CORE TASKFORCE MEMBERS</th>
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<tbody>
<tr>
<td>Chairman Infection Control Committee</td>
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<tr>
<td>ICHE Team representatives including Assistant Director, Hospital Epidemiologist, Senior Infection Control Coordinator, others as required</td>
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<tr>
<td>Medical and Clinical Affairs</td>
</tr>
<tr>
<td>Microbiology Section Head or Designee</td>
</tr>
<tr>
<td>Assistant Director ICHE</td>
</tr>
<tr>
<td>Nursing Affairs Executive Director/Desiginee</td>
</tr>
<tr>
<td>Family Medicine &amp; Polyclinics Director/Desiginee</td>
</tr>
<tr>
<td>Family Medicine &amp; Polyclinics Occupational Health Specialist</td>
</tr>
<tr>
<td>Department of Emergency Medicine Director/Desiginee</td>
</tr>
<tr>
<td>Environmental Services Director/designee</td>
</tr>
<tr>
<td>Central Sterile Supply Distribution Manager/Desiginee</td>
</tr>
<tr>
<td>Infectious Diseases Director/Desiginee</td>
</tr>
<tr>
<td>Quality Management Department Director/Desiginee</td>
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<tr>
<td>Supply Chain Director/Desiginee</td>
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Core taskforce responsibilities shall include but not limited to:

- Implementation of the Epidemic Plan and its Associated appendices
- Adherence to appropriate policies and procedures including MCO-MC-INF-04-062: Investigation of Suspected Epidemic/Outbreak Policy
- Conduct assessment of type and level of the epidemic
- Conduct assessment of appropriate triage locations and space utilization
- Conduct assessment of patient segregation (symptomatic and asymptomatic) within triage/high risk areas
- Conduct assessment of appropriate required resources (e.g. manpower, PPE, bed capacity)
- Facilitate Epidemic Taskforce meetings
- Provide a daily progress report (see communications page 7) as needed to the CEO, COO, MCA, Quality Management, Nursing Affairs, Emergency Preparedness Committee, Hospital Safety Committee and other relevant departments and committees
- Implement containment and management plans as deemed appropriate
- Monitor compliance of containment and management of the epidemic through multidisciplinary EOC rounds
- Develop and provide educational material pertinent to the epidemic, patients, health care workers and visitors.
- Ensure visual recommendations/awareness is disseminated to appropriate departments (e.g. cough etiquette posters in DEM)
- Ensure availability and accessibility of required supplies
- Provide recommendations for monitoring employee sickness during plan activation
- Communicate with collaborating departments to raise awareness during plan activation (e.g. Public Relations, Supply Chain Management, Quality Management).
- Communicate with the MOH, and other organizations as required

Infection Control & Hospital Epidemiology Department Responsibilities shall include:

- Twenty-four (24) hour service including on-call after hours to respond to inquiries and issues raised due to epidemics and/or adverse events, and provide a unit and/or hospital-wide response as required
- Be active members of the Epidemic Task Force
- Provide ongoing guidance for HCWs in regards to preparedness for an Influx of Infectious patients
- Provide thorough communications and dissemination of information on standard and transmission based precautions during Epidemic Plan activation
- Update ICHE policies at least every three (3) years or as guidelines change while communicating policy updates hospital-wide
Assessment
The assessment phase provides information on the existing situation, forms the basis for the development and activation of the plan and provides baseline data against which prospective changes are assessed or measured. Furthermore, it is a continuous phase which mirrors hospital-wide surveillance activities, and all policies developed by ICHE in order to respond to potential epidemics.

It includes but is not limited to:
1. Assessment of the current level of capability
2. Review of essential supplies resource inventory (e.g. gloves, gowns, masks, hand hygiene products, etc.)
3. Review patient movement to maintain segregation of those with/without symptoms
4. Report suspected cases, conditions, or events to the next level of authority as appropriate

Planning
The key to being prepared is planning. Failure to plan can result in loss of control, communications, and panic amongst HCWs, patients, families, the worried well and others.

The WHO state that:

“Disease outbreaks can occur at unexpected times and places and may grow rapidly in scale. They also attract considerable attention from the public, media, and government agencies. Outbreaks have the potential to severely disrupt community life. They are not isolated events but happen within existing social, cultural, political, and economic settings.”

ICHE Risk mitigation strategies (table 1) is an approach for reducing the severity of an epidemic/outbreak by identifying and providing measures to minimize or eliminate the risk.
<table>
<thead>
<tr>
<th>ICHE potential Risk</th>
<th>ICHE Mitigation Strategy</th>
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| **Lack of planning** | Advocate an annual ‘test’ of the Epidemic Plan  
Review Epidemic Plan annually after ‘test’, as guidelines change or at least every three (3) years  
Review ICHE policies at least every three (3) years  
Review and maintain case definition and clinical management flow chart (refer to Attachment 1)  
Review and maintenance of appropriate pathogen specific Epidemic Plans:  
  - Ebola Virus Disease (Attachment 2)  
  - MERS-CoV (Attachment 3)  
Review and maintain ICHE Code Yellow Plan as scheduled |
| **Lack of appropriate educational materials** | Develop and review cough etiquette information including posters  
Develop and review information boards (e.g. roll ups)  
Develop and review hand hygiene leaflets for HCW, patients, families and others |
| **Lack of knowledge amongst patients, families, HCW, others** | Increase educational awareness for all HCW  
Increase awareness of Epidemic Plan for all HCWs  
Liaise with appropriate departments to provide specific patient/family/visitors education materials |
| **Reduction of workforce (HCW)** | Advocate annual flu vaccination campaign for HCWs  
Provide specific front line staff education  
Educate on respiratory and cough etiquette  
Assist high risk areas in procuring appropriate supplies of surgical masks for patient use as required  
Review high risk area patient flow and risk of transmission to HCWs  
Provide up-to-date education and training on influenza risk factors, protective behaviors, and instruction on appropriate preventative behaviors |
| **Poor work practice controls** | Ensure appropriate number of no-touch trash bins  
Ensure supply of hand wash supplies (soap/towels)  
Ensure supply of alcohol hand rub is available in appropriate/key locations  
Ensure supply of EPA approved disinfectant for cleaning of equipment and environmental surfaces  
Communicate with Microbiology to ensure adequate supplies are available for specimen testing |
| **Poor engineering controls** | AIIR (Negative pressure room) for AGP are available and used appropriately  
Review flow of triage patients for EPRl by a multidisciplinary team  
Conduct multidisciplinary EOC rounds on a regular basis within all key areas and address identified discrepancies  
Ensure installation of physical barriers in high risk areas, as appropriate |
| **Poor administrative controls** | Open communication channels are maintained between MCA, Epidemic Taskforce and ICHE members  
Epidemic Taskforce to facilitate communication with all departments as required  
Ensure HCW exposure related policies are reviewed at least every three (3) years  
Minimize face-to-face contact (e.g. patient wears surgical mask) |
| **Lack of PPE** | Ensure all HCWs wear a high-particulate respirator (e.g. N95 mask) and have been fit tested and conduct a fit check at each donning of the mask  
Ensure adequate supplies are available in all high risk areas  
Ensure HCWs have appropriate knowledge in correct PPE selection  
Liaise with appropriate departments to ensure stockpiling of PPE supplies |
Part B

Response
Once the Epidemic Taskforce members have confirmed an epidemic in effect they will initiate the plan with the following steps: implementation, immediate response, and management. ICHE in collaboration with its partners shall provide appropriate infection prevention and control recommendations during an EPRI to ensure the safety of all KFSH&RC (Gen. Org.) patients, families, staff, the worried well, and others.

Management of Infectious Patients
The Epidemic Taskforce and/or ICHE shall communicate Epidemic Plan activation to all appropriate departments. The following duties and responsibilities will be undertaken:

- Review and disseminate case detection and clinical management flow charts (refer to Appendix 1 to 4)
- Review and disseminate pathogen specific epidemic plan information: MERS-CoV (Appendix 5) and Ebola Virus Disease (Appendix 6), other developed and disseminated as required
- Review emergency care areas (DEM, FM, HDU) on a daily basis or more frequently as required, and provide immediate infection control recommendations to reduce risk of transmission
- Recommend an appropriate method of increasing triage capacity to identify symptomatic patients including staff
- Separate symptomatic and asymptomatic patients
- Provide symptomatic patients with surgical masks
- Ensure triage of all persons/patients with the suspected epidemic infectious disease arriving at KFSH&RC-Riyadh is undertaken appropriately and directed to the appropriate assessment location:
  - Unstable patients shall be admitted immediately to a private isolation room for immediate care
  - Stable patients shall be assessed at the Fast Track area of DEM, as appropriate
  - If the Fast Track area is not available or cannot accommodate the number of patients with the suspected infectious disease, the Epidemic Taskforce will immediately allocate an alternative appropriate location outside of the DEM where patients can be seen initially and identified as needing emergency care, or referred to a designated outpatient care site for further diagnosis and management
- Liaise and communicate with Microbiology Laboratory about testing and results as appropriate
- Encourage discharge home of patients if clinically stable and cleared by a Physician
- Collect surveillance data
- Epidemic Taskforce shall instruct and be informed of any potential influx of EPRI persons in other departments (e.g. outpatient), and provide recommendations as required
- Implement, monitor and review the Epidemic Taskforce member recommendations
- Provide appropriate health education to patients, families, staff, the worried well and others
- Ensure appropriate educational materials are available in all emergency care, triage, and assessment areas

Management of HCWs
- Communication and collaboration shall be sustained to ensure adequacy of resources and other issues of concern are communicated and adhered to
- “Just-in-time training’ specific to the disease involved, include as appropriate Epidemic Taskforce recommendations
and changes/updates in policies/protocols to all emergency care areas

- Reinforce respiratory and cough etiquette
- Ensure availability of critical supplies
- Enforce adherence to PPE use including donning and doffing procedures
- Symptomatic EPRI persons to be provided with surgical masks, as applicable
- Separate/segregate symptomatic and asymptomatic patients
- Ensure infected/symptomatic HCWs adhere to and have appropriate guidance regarding work restrictions
- HCWs at high risk for complications (e.g. pregnant women and immune-compromised persons) shall be reviewed and re-assigned as appropriate to lower-risk duties (e.g. caring non-infected patients or to administrative duties without direct patient care/contact); Note: It shall be the responsibility of each HCW to notify their immediate supervisor/Manager of any issue that they know of or suspect places them at higher risk

**Education of HCWs**
- HCWs to call their direct Supervisor/Manager in the event that they are displaying signs and symptoms of relevant disease of concern before they report for duty
- Adherence to all ICHE policies
- Understand appropriate PPE required for use and appropriate donning, doffing and disposal procedures
- Understand disease modes of transmission
- Know and adhere to WHO “5 moments for hand hygiene”

**Management of Resources**
ICHE will work closely with Supply Chain Management Services and other key Departments to ensure stockpiling of critical resources:

- Hand hygiene products
- Isolation and other appropriate gowns
- Appropriate face masks (surgical and N95/PAPR)
- Gloves
- Eye and face protection
- Linen
- Waste bags/waste handling

**Recovery**
Recovery involves implementing interventions that are required to return KFSH&RC-Riyadh to a pre-epidemic baseline. It includes reviewing the epidemic from the beginning to ensure future recommendations/actions are submitted and reviewed by the appropriate departments and committees. Recovery interventions include but are not limited to:

- Debrief and disbandment of Epidemic Taskforce
- Communication regarding resolution of the epidemic is made hospital wide
- Documentation (e.g. reports, memos, data) related to the epidemic, and any future recommendations are
presented to the appropriate committees, management, and other stakeholders for evaluation and assessment

• Post epidemic education is provided as appropriate

References


JCIA 5TH Edition 2014 http://ig.kfshrc.edu.sa/wps/wcm/connect/569f7e80410ded2cbe22be238f548999/JCIH14%2520v1%252008%252030%25202013%5B2%5D.pdf?MOD=AJPERES&CACHEID=569f7e80410ded2cbe22be238f548999

MCO-MC-INF-04-062 Epidemiologic Investigation of a Suspected Epidemic/Outbreak
Appendix 1: Outpatient Flow Chart for EPRI/MERS CoV

**Screening Includes presence of:**
1. New/worsening cough or Shortness of Breath
2. Fever
3. Vomiting and/or diarrhea
4. Recent contact with person having flu-like illness
5. Suspected airborne disease (MTB, MERS-CoV, Chickenpox, Measles)

**PPE include:**
- Hand Hygiene, Facial protection as appropriate (surgical mask, face shield, goggles)
- gloves/- gown, N95 mask (if applicable)

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**CLINIC EXAM ROOM (AIIIR)**

- **RN** does PPE
- *Re-screen patient and takes vital signs Notifies MD

**IF AIIIR room available?**

- **YES**
  - MD assessment: Flu-like illness or airborne disease suspected
    - Per MD orders: obtain CBC and portable chest X-ray

- **NO**
  - Return to normal appointment processes

**IF MD assessment: Flu-like illness or airborne disease suspected**

- **YES**
  - Per MD orders: obtain CBC, Portable CXR, appropriate specimen(s)
    - Consult with Infection Control, as required
    - Admit, Discharge or Transfer to DEM as appropriate

- **NO**
  - After MD assessment: Flu-like illness or airborne disease suspected
    - Per MD orders: obtain CBC and portable chest X-ray
    - Transfer patient to AIIIR Room if airborne disease suspected
      - Per MD orders obtain appropriate specimen(s)
      - Consult with Infection Control, as required

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**CLINIC EXAM ROOM (SINGLE NON-AIIIR)**

- **RN** does PPE
- *Re-screen patient and takes vital signs Notifies MD

**IF MD assessment: Flu-like illness or airborne disease suspected**

- **YES**
  - After MD assessment: Flu-like illness or airborne disease suspected
    - Per MD orders obtain CBC and portable chest X-ray

- **NO**
  - Return to normal appointment processes
Appendix 2: DEM Flow Chart for EPRI/ MERS CoV

1. Are you having new/worse cough or shortness of breath?
2. Do you have a fever?

- **SARI** and suspect lower respiratory tract involvement:
  - Fever > 38 C, cough, shortness of breath

- DEM Register and Triage (except for patients already registered)

- Initiate Airborne/Contact Precautions
  - Use *AHR* negative pressure room
  - (If *AHR* room not available, place in next most appropriate single room until AHR becomes available and transfer ASAP)
  - If a single room is not available place in a separate area if possible or keep 2 meters distance from other patients and provide a face mask to the patient

- Specimen Collection
  - MERS CoV (sputum/NSA) screen
  - Multiplex PCR Test for viral/bacterial pathogens

- Communication
  - Contact Infection Control for further instructions as required

- Etiology
  - Has an etiology been determined?

- MERS-CoV positive

- Other Infectious Diseases
  - Use precautions specific to the pathogen

- Admit/Discharge as appropriate

- Management
  - Continue airborne/contact precautions and initiate treatment protocol

* AHR = Airborne Infection Isolation Room
* ASAP = as soon as possible
* PPE = Hand hygiene, facial protection, gloves, a gown, N95 mask/PAPR (if tested)
* SARI = Severe Acute Respiratory Illness
* URI = Upper Respiratory Illness

*Screening Includes presence of:
1. New/worsening cough or Shortness of Breath
2. Fever
3. Vomiting and/or diarrhea
4. Recent contact with person having flu-like illness
5. Suspected airborne disease (MTB, MERS-CoV, Chickenpox, Measles)
Appendix 3: Inpatient Flow Chart for EPRI/ MERS CoV

1. Patient evaluation
   - Patient complains of flu-like symptoms/displays flu-like symptoms/Patient has contact with confirmed or suspected case, Sitter/relative displays flu-like illness or reports recent contact (asked to leave/be replaced)
   - NO: No further action required Continue care as per normal processes
   - YES: Initiate appropriate transmission-based precautions (Droplet/Contact or Airborne/Contact if airborne disease suspected)
     - Consult Infection Control as required

2. If not already in an AIIR room
   - Transfer to an AIIR if airborne disease suspected
     - RN dons PPE
     - Screens patient and takes vital signs
     - Notifies MD
     - Consult with Infection Control as required if AIIR not available

3. Is AIIR room required?
   - YES: Inpatient room NON-AIRR acceptable
     - RN dons PPE, Screens patient and takes vital signs
     - Notifies MD
   - NO: No further action required Continue care as per normal processes

4. After MD Assessment; flu-like illness or airborne disease suspected?
   - NO: No further action required Continue care as per normal processes
   - YES: Per MD orders obtain appropriate tests:
     - While wearing the appropriate PPEs obtain CBC, Portable CXR, specimen(s), as ordered

5. Implement effective infection control measures:
   - Adhere to Standard Precautions
   - All HCWs to wear appropriate PPE as per transmission based precautions
   - Limit number of visitors to the patient room
   - Limit patient movement outside the room
   - If patient must leave assigned room patient to wear surgical mask

*Screening includes presence of:
1. Fever
2. Vomiting and/or diarrhea
3. Recent contact with person having flu-like illness
4. Suspected airborne disease (MERS, MERS-CoV, Chickenpox, Measles)

**PPE include:
- Hand Hygiene, facial protection (as appropriate surgical mask, face shield, goggles), gloves, gown, N95 mask (if applicable)

AIIR: Airborne Infection Isolation Room (negative pressure)
PPE: Personal Protective Equipment
RN: Registered Nurse
HCW: Health Care Worker

* Updated December 2015
Appendix 4: HHC Flow Chart for EPRI/MERS CoV

- **HHC Visit**
  - Patient complains of flu-like symptoms, or
  - On patient assessment patient displays flu-like symptoms, or
  - Patient has contact with confirmed/suspected case

**YES**

- **RN dons PPE**, *screens patient and takes vital signs
  - Consult with Infection Control as required

- Inform MD of patient screening results

**NO**

- HHC Visit
  - No further action required
- Sitter/relative displays flu-like illness or reports recent contact with confirmed/suspected case

**YES**

- **RN dons PPE**, and screens patient
- **Notifies MD of family member contact with patient**
  - Patient has flu-like illness?

**HOME ISOLATION**

- MD orders Home Isolation for Flu-like Illness:
  - On all HHC Visits wear the appropriate PPE whilst patient is symptomatic

**YES**

- HOSPITAL FOLLOW UP
  - MD orders urgent hospital follow-up/admission:
    - Inform DEM OR accepting unit and paramedics of possible MERS CoV/Flu-like Illness
    - If MERS CoV or other airborne disease* suspected; patient to be transferred to AIIR upon arrival at KFSHRC-Riyadh
    - Provide patient with a surgical mask to wear during transportation/outside of room
    - Limit number of visitors travelling with the patient
    - All HCWs to wear appropriate PPE** as per transmission based precautions

- **Upon transfer to KFSHRC-Riyadh ALL HCW to follow inpatient/DEM flow chart**

*Screening includes presence of:
1. New/worsening cough or Shortness of Breath
2. Fever
3. Vomiting and/or diarrhea
4. Recent contact with person having flu-like illness
5. Suspected airborne disease (MERS-CoV, Chickenpox, Measles)

**PPE include:**
- Hand Hygiene, facial protection (as appropriate surgical mask, face shield, N95 mask/ PAPR, goggles)
- gloves, gown, N95 mask (if applicable)
Appendix 5: MERS CoV Pathogen Specific Epidemic Plan

PHASE 1 Low Level of Alertness for MERS-CoV Epidemic Plan:
A. KFSH&RC-Riyadh process for admission/discharge, inpatient management, and assessment in Department of Emergency (DEM) as per normal policy

PHASE 2 High-Level of Alertness for MERS-CoV Epidemic Plan – From 0 to 2 Confirmed Cases in KFSH&RC-Riyadh:
A. Medical & Clinical Affairs (MCA) announce escalation of alertness for MERS-CoV Epidemic Plan
B. Increase the stock-pile of essential supplies quantities to ensure ongoing availability for 4 to 6 months depending on ease of availability (i.e. surgical and N95 masks, isolation gowns, non-sterile gloves, goggles, face shields, hand hygiene products, environmental surface cleaning products).
C. Increase hospital-wide educational campaign to improve compliance with infection prevention measures
D. Decrease number of inpatients that do not require critical management (as attached)
E. Limit admission of referral patients, if applicable
F. Refer non-critical patients to other Medical Centers, if applicable
G. Screen patients attending outpatient visits as per attached Outpatient Assessment Flow Chart
H. Triage patients presenting to DEM as per attached DEM Flowchart
I. Limit the High Dependency Unit (HDU) for immediate admission for confirmed MERS-CoV cases to the Airborne Infection Isolation Room (AIIR) (No. 49 and 50)
J. HDU open bedded area can be utilized by regular patients
K. Confirmed Pediatric MERS-CoV cases shall be admitted to the PICU single/negative pressure rooms

PHASE 3 High-Level of Alertness for MERS-CoV Epidemic Plan - Increased Number of Confirmed MERS-CoV Patients from 3-6 within KFSH&RC-Riyadh:
A. In addition to Phase 2
B. If more than two confirmed MERS-CoV cases admit to MICU-C single/negative pressure rooms (No. 17 to 20)
C. Increase the stock-pile of essential supplies to ensure ongoing availability for 6 months.
L. Limit non-critical patient visits to outpatient clinics

PHASE 4 High-Level of Alertness for MERS-CoV Epidemic Plan - Increase Number of Confirmed MERS-CoV Patients Exceed 6 within KFSH&RC-Riyadh; Uncontrolled Outbreak Situation may or may not be Occurring:
A. In addition to Phase 2 and 3
B. Limit DEM access for Category 1 and 2 patients only
C. Discharge all non-critical patients
D. Close all non-critical outpatient areas
E. If patient number of confirmed MERS-CoV cases exceed capacity of HDU (2) and MICU-C (4) utilize the single/negative pressure rooms in SSCU-B (4) (No. 32-35)
F. If patient number of confirmed MERS-CoV cases exceed capacity of HDU (2), MICU-C (4) and SSCU-B (4), single/negative pressure rooms located in in-patient units shall be made available for stable non-vented confirmed MERS-CoV cases
G. If unstable and vented confirmed MERS-CoV cases exceed 10 review availability of other ICU single/negative pressure rooms for immediate use and transfer to the MOH MERS-CoV designated hospital in Riyadh

De-escalation of Alertness phases will occur as the number of confirmed MERS-CoV cases decrease within KFSH&RC-Riyadh and within the Kingdom of Saudi Arabia (KSA) as reported by the Ministry of Health (MOH):
A. MOH decreases level of epidemic alertness within KSA
B. No new admission of confirmed MERS-CoV have been identified over a period of 8 weeks
C. No cross-contamination within KFSH&RC-Riyadh has been identified; including patients and staff
D. MCA announce de-escalation of the Epidemic Plan for MERS-CoV
List of Measures for Decreasing the Number of Inpatients Who Do Not Require Critical Management at KFSH&RC-Riyadh; as per Authorization by Medical & Clinical Affairs (MCA)

Phase 2: Decrease bed-occupancy by 20% by utilizing the below measures:

- Initiate daily assessment by all department Chairman including medical, surgical, pediatric, obstetrics/gynecology, etc. for immediate discharge of non-critical inpatients
- Cancel all elective and non-essential/non-emergency admissions (excluding critical/high risk patients i.e. oncology, transplant, medical emergencies, etc.)
- Cancel all elective and non-essential/non-emergency surgeries
- Cancel all elective and non-essential/non-emergency procedures
- Admitted patients within DEM to have a stay less of than 4 hours

Additional Measures for Implementation; as per Authorization by Medical & Clinical Affairs (MCA)

- Expedite the purchase of powered-air-purifying respirators (PAPR) (200)
- Convert current open bedded HDU area (6) to single/negative pressure rooms (4)
- Create separate waiting/triage area in DEM for patients presenting with flu-like illness
- Increase turn-around time for MPCR MERS-CoV laboratory results
- Ensure all clinical staff who provide direct patient care to those with airborne pathogens are Fit Tested and educated on Fit Check procedure for high-particulate respiratory masks (e.g. N95 masks)
- Provide daily updates on Info Gateway Homepage on MERS-CoV status report through staff real-time ease of access to the MOH Command and Control Centre

Appendix 6: EVD Pathogen Specific Epidemic Plan

PHASE 1 Low Level of Alertness for EVD Epidemic Plan:
A. KFSH&RC process for admission/discharge, inpatient management, and assessment in DEM as per normal policy

PHASE 2 High-Level of Alertness for EVD Epidemic Plan – From 0 to 2 Confirmed Cases in KFSH&RC:
M. Medical & Clinical Affairs (MCA) announce escalation of alertness for EVD Epidemic Plan
N. Increase the stock-pile of essential supplies (i.e. surgical and N95 masks, gown, gloves, goggles, hand hygiene products) by six times the average monthly usage
O. Increase hospital-wide educational campaign to improve compliance with infection prevention measures
P. Decrease number of inpatients that do not require critical management (as attached)
Q. Limit admission of referral patients, if applicable
R. Refer non-critical patients to other Medical Centers, if applicable
S. Triage patients presenting to Department of Emergency (DEM) as per attached DEM Flowchart
T. Open and limit the High Dependency Unit (HDU) for immediate admission for confirmed MERS-COV cases to the single/negative pressure rooms (No. 49 and 50)
U. HDU open bedded area can be utilized by non-immunocompromised and non-contagious patients
V. Confirmed Pediatric MERS-COV cases shall be admitted to the PICU single/negative pressure rooms

PHASE 3 High-Level of Alertness for EVD Epidemic Plan - Increased Number of Confirmed EVD Patients from 3-6 within KFSH&RC:
D. In addition to Phase 2
E. Additional confirmed EVD cases (3-6) admit MICU-C single/negative pressure rooms (No. 17 to 20)

PHASE 4 High-Level of Alertness for EVD Epidemic Plan - Increase Number of Confirmed EVD Patients Exceed 6 within KFSH&RC:
H. In addition to Phase 2 and 3
I. If patient number of confirmed EVD cases exceed capacity of HDU (2) and MICU-C (4) utilize the single/negative pressure rooms in SSCU-B (4) (No. 32-35)
J. If patient number of confirmed EVD cases exceed capacity of HDU (2), MICU-C (4) and SSCU-B (4) single/negative pressure rooms located in in-patient units shall be made available for stable non-vent ed confirmed EVD cases
K. If unstable and vented confirmed EVD cases exceed 10 review availability of other intensive care single/negative pressure rooms, for immediate use

De-escalation of Alertness levels will occur as number of confirmed EVD cases decrease within KFSH&RC and the Kingdom of Saudi Arabia (KSA) as reported by the Ministry of Health (MOH):
E. MOH decreases level of epidemic alertness within KSA
F. No new admission of confirmed EVD have been identified over a period of 8 week
G. No cross-contamination within KFSH&RC has been identified; including patients and staff
H. MCA announce de-escalation

List of Measures for Decreasing the Number of Inpatients Who Do Not Require Critical Management at KFSH&RC; as per Authorization by Medical & Clinical Affairs (MCA)
1. Decrease bed-occupancy by 50% by utilizing below measures:
   • Initiate daily assessment by all department Chairman including medical, surgical, pediatric, obstetrics/gynecology, etc. for immediate discharge of non-critical inpatients
   • Cancel all elective and non-essential/non-emergency admissions (excluding high risk patients i.e. oncology, transplant, medical emergencies, etc.)
- Cancel all elective and non-essential/non-emergency surgeries
- Cancel all elective and non-essential/non-emergency procedures
- Admitted patient in DEM to stay less than 4 hours and then move/admit to a patient floor

**Flowchart Description:**

1. **Does the patient have a fever greater than 38°C?**
   - **YES**
     - **Has your patient been to an area where VHF is endemic in the last 21 days?**
       - **YES**
         - Call MOH 937- Consult with on call EVD consultant
         - Inform ICHE immediately
         - Inform DEM Consultant
       - **NO**
         - No risk of VHF—no further viral hemorrhagic fever specific action required.
     - **NO**
       - **Has your patient been involved in the care of anyone else with travel to a VHF endemic region in the last 4 weeks?**
         - **YES**
           - VHF infection is possible
             - A senior member of clinical staff shall be designated to take control of the following actions:
               1. Isolate patient in the nearest single room (preferably negative pressure in case of need for aerosol-generating procedure)
               2. Wash hands with soap and water and then alcohol hand rub
               3. Notify Infection Control immediately
               4. Do not allow anyone to enter the patient's room unless they are wearing appropriate personal protective equipment (VHF-PPE)
               5. Do not send any specimens to any Laboratory until this has been discussed and cleared with Microbiology (DO NOT USE THE PNEUMATIC TUBE SYSTEM-Must be hand carried)
               6. Start a list of all members of staff and visitors who have had close contact with the patient.
         - **NO**
1. **NO**