



MINISTRY OF NATIONAL GUARD HEALTH AFFAIRS  
KINGDOM OF SAUDI ARABIA

# Quality & Patient Safety Newsletter



A QUARTERLY EDITION OF THE QUALITY & PATIENT SAFETY COUNCIL

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IN  
THIS ISSUE

## MERS-CoV Outbreak: A Transformational Beginning

**SPECIAL  
EDITION**



Riyadh



Jeddah



Al Ahsa



Al Madinah



Al Dammam

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Dr. SAAD AL MOHRIJ

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IN  
THIS ISSUE

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## ABOUT THE NEWSLETTER

*“By providing important and relevant information to healthcare providers, this Newsletter aims to enhance communication of quality and patient safety information, raise awareness of reported adverse events and maintain an ongoing link to all the medical departments of the Ministry of National Guard Health Affairs (MNG-HA) facilities. ”*

**BUILDING SAFER CARE:** A Leadership & Organizational Priority





# STATEMENT

## Dr. Bandar Al Knawy, MD, FRCPC

Chief Executive Officer  
Ministry of National Guard-Health Affairs (MNG-HA)

The National Guard Health Affairs has finally been declared MERS-CoV free last 14 October 2015. While it has been considered happy and good news, the organization cannot discount that it was truly a catastrophic crisis of an overwhelming magnitude, which subsequently developed and became a major learning experience for everyone. The critical situation has enlightened the organization that transformation is not an option, but an immediate necessity.

From the time PHASE III of the Infectious Diseases Epidemic Plan was activated on the 13th of August 2015 which resulted in the shutdown of the Emergency Care Center (ECC), Outpatient and Inpatient Services -- system gaps which posed serious threats were identified. What followed next were major activities with the goal not only to recommission the hospital, but to embark on a robust transformational change. Transformation projects for Clinical and Operational Departments, ECC, Bed Management, Nursing Services, Family Medicine and Ambulatory Care were introduced. Parallel campaigns and educational activities on "Right Care, Right Here, Right Now" were conducted by the Infection Prevention and Control as well as the Nursing Transformation Program. Also, a workshop on 'Transformational Projects Plan' is in the pipeline which is anticipated to integrate all the schemes for MNG-HA and guarantee that the plans are executed, monitored and sustained. This workshop is envisioned to achieve radical and long lasting transformational change across MNG-HA to ensure a world-class organization delivering excellent patient care into the future.

The post MERS-CoV era has proven that going through the critical situation is part of MNG-HA's important journey to excellence in clinical care. I thank all the staff who truly supported and work very hard during the crisis. Please join me as we mark a new beginning for a transformed organization.





# PREFACE

## Dr. Saad Al Mohrij

Editor-In-Chief, Quality and Patient Safety Newsletter  
Chief Medical Officer  
Ministry of National Guard-Health Affairs (MNG-HA)

True to its mission and vision, MNG-HA constantly strives to provide its patients the highest quality of healthcare service and patient safety that entails an unending and evolving process of improvements, coupled with technological and facility advancements for its hospitals. But amidst this continuing endeavor, the institution has never been more threatened until the recent MERS-CoV Outbreak in KAMC-Riyadh. To highlight the challenges faced, lessons learned, interventions effected, and future precautionary preparations should another crisis befall the organization, this special edition of the Quality and Patient Safety Newsletter will focus on our MERS-CoV experience.

The inevitable temporary shutdown of KAMC-Riyadh on 18 August 2015 as a penultimate solution to address the MERS-CoV crisis due to the activation of Phase 3 of the Infectious Diseases Epidemic Plan (IDEP) proved to be a daunting experience for the institution. Great concern was evident then given the growing number of positive MERS-CoV cases necessitating a more aggressive approach to protect the patients and the healthcare workers as well. Arresting the proliferation of this infection within KAMC-Riyadh served as a challenge for all while preventive strategies and precautionary measures were being laid out. Not only did it take full engagement of the higher management with no less than H.E. Dr. Bandar Al Knawy at the helm, but all departments and services collectively provided hands-on participation and support: administration, clinical departments, Operations, Nursing Services, Quality and Patient Safety Department, Laboratory Services, ambulatory care services, and even the security enforcement, but most of all, the Infection Prevention and Control Department.

As with all crises or challenges, the MERS-CoV experience equally presented opportunities for the organization to improve the system and practices within KAMC-Riyadh. Thus a Command Control Center was formed to oversee the implementation of corresponding corrective and preventive measures:

- Closure of the Emergency Care Center (ECC)
- Enforcement of stringent infection control practices
- Setting up an integrated mobile field hospital for patient screening and triaging
- Temporary suspension of elective surgical procedures and one day operations and admissions
- Transfer of urgent cases to other hospitals in coordination with the MoH and private hospitals; and,
- Shutdown of several clinics except for high risk cases requiring urgent treatment.



Along with the implementation of these measures, the experience provided a chance to conduct hospital-wide situational analysis, and comprehensive system and process assessment with the help of experts from the United Kingdom National Health Service. Planning workshops were also held leading to the development of a strategic plan to reopen KAMC-Riyadh as well as recommendations to combat future epidemics. Subsequently, the Transformation Program was launched that aims to redesign and reengineer the healthcare delivery system within KAMC-Riyadh.

Actions taken include:

- Allocation of Surgical Tower as Temporary Isolation Units
- Establishment of Corona Management Team (CMT)
- Establishment of Corona Preparedness and Response Team (CPRT)
- Initiation of MNGHA Infection Prevention and Control Training and Competency Program
- Establishment of a Call Center
- Establishment of Medicine Admission Unit at Riyadh Care System
- Establishment of Bed Management Department
- Establishment of an overall organizational transformation plan; and,
- Comprehensive facilities upgrade in the ECC, wards and various locations at KAMC - Riyadh.

These interventions ushered the re-commissioning of KAMC-Riyadh towards its re-opening and full operation on 04 October 2015 including the clinical services and inpatient wards, and the eventual return of all patient services.

Let me now take this opportunity to thank H.E. the CEO for his unwavering leadership and guidance throughout this trying period. I would also like to acknowledge and extend my appreciation to all the clinical departments, Operations, Nursing Services, administrative departments and services, and the Infection and Prevention Control Department for their active participation and support which contributed immensely to overcoming this crisis. Furthermore, the assistance extended by the Ministry of Health and other private hospitals is well valued without which we would not have continued to provide the services to our patients requiring urgent or constant care and treatment.

As we go through this transformation phase to bring the organization to a higher level of effectiveness, I hereby enjoin everyone to sustain the commendable dedication and determination you have shown because I believe that through our collective action, we can successfully surmount future similar obstacles through our journey towards becoming a high reliability organization.



# MERS-CoV

## What is Middle East Respiratory Syndrome Corona Virus: MERS-CoV?

**Dr. Thamer Alenazi**, Director, Hospital Epidemiology, Infection Prevention & Control Department, MNG-HA

**Dr. Hanan Balkhy**, Executive Director, Infection Prevention & Control Department, MNG-HA

The Coronaviridae is a family of single-stranded RNA viruses that cause disease in humans and animals. The first two (2) members of this family to infect humans were identified in the 1960s, known as 229E and OC43. In 2003 this family of viruses attracted global attention due to the emergence of a new virus that led to the pandemic Severe Acute Respiratory Syndrome (SARS). Later on, two additional novel coronaviruses, NL63 and HKU1, were identified in 2004 and 2005 respectively. While the four (4) known human coronaviruses, 229E, OC43, NL63, and HKU1 cause mild to moderate respiratory illness, the SARS virus led to illness in over 8,000 humans and over 700 deaths in less than a 10 month time span. MERS-CoV initially named EMC corona virus, in link with Erasmus Medical Center where the virus was sequenced for the first time in 2012, also may cause severe respiratory illness in humans, particularly in patients with comorbidities. MERS-CoV has also shown the ability to lead to hospital-based outbreaks without a parallel outbreak in the community setting.

### Six (6) human corona viruses that cause illness in humans

Corona virus	Date of Discovery	Type of illness
229E	1960s	Common cold, bronchiolitis or pneumonia
OC43	1960s	Common cold or pneumonia
SARS	2003	Upper and lower respiratory tract infection and gastroenteritis
NL63	2004	Upper or lower respiratory tract infections, croup or bronchiolitis
HKU1	2005	Pneumonia
MERS- CoV	2012	Upper and lower respiratory tract infections and gastrointestinal illness



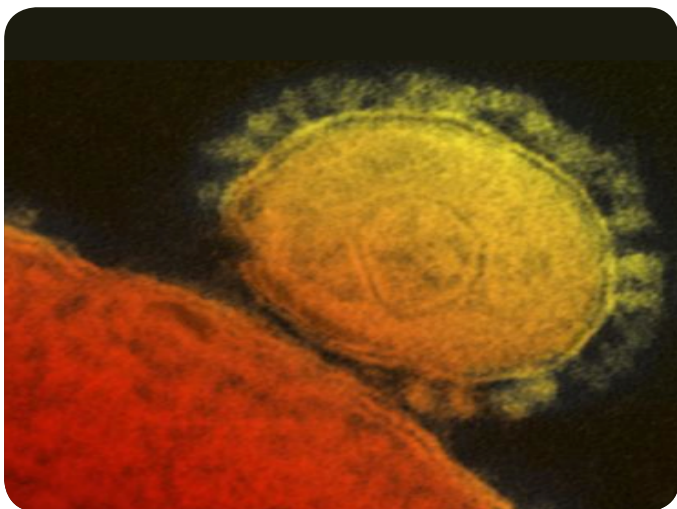
## SECTION 1- MERS-CoV Preparation & Response

### Middle East Respiratory Syndrome Corona Virus

## I. Preparing the hospital for an emerging pathogen

**Dr. Hanan Balkhy**

Executive Director, Infection Prevention and Control Department, MNG-HA



### The beginnings of MERS-CoV:

The first reported case of MERS-CoV was in September 2012 through the work of a curious virologist from Solaiman Fakeeh Hospital in Jeddah. The patient was a merchant from Bisha, Saudi Arabia who presented with an atypical pneumonia. Initial virological studies confirmed it to be caused by a corona virus, five (5) of which are known to cause human disease; however this was a new virus, not known to infect humans before. Such novel viruses are referred to as emerging infections, as they emerge as infecting the human species. Many pathogens exist for years without causing disease in humans; many exist in animals, and are known as zoonotics. But at a certain time and point a species jump takes place and such pathogens adopt to gradually become totally human pathogens or continue to exist in the animal world but cause sporadic human illness. Some, such as a Severe Acute Respiratory Syndrome (SARS), also a corona virus, revert back to only infecting animals and fail to establish themselves as human pathogens.

In 2012, a total of five (5) MERS-CoV cases were diagnosed in the Kingdom of Saudi Arabia and no outbreaks took place. The World Health Organization (WHO), through its Eastern Mediterranean Office (EMRO), how-

ever, looked back at a hospital outbreak of cases presenting with respiratory illness that took place in April 2012. The initial testing of samples from that outbreak was not able to identify a pathogen. Stored samples were retrieved and to their surprise MERS-CoV was identified. So in fact, the first known MERS-CoV Outbreak took place in a hospital in Amman, Jordan in April of 2012.

As is done with all emerging pathogens, swift action by the WHO to set case definitions for the new pathogen took place in collaboration with the Saudi Ministry of Health (MoH). In addition, the WHO was interested in monitoring any change in transmission potential that may lead to a large-scale outbreak or even a pandemic.

The Saudi MoH also developed, through its National Infectious Disease Committee, the much needed infection control guidelines for this new illness. In 2013-2015 many sporadic cases presented to hospitals throughout the Kingdom, and several hospital-based outbreaks took place. As of October 19th 2015, 1,260 cases were diagnosed Kingdom-wide, among them 539 passed away.

**Figure:** The MNG-HA Infectious Disease Epidemic Plan describes three (3) Phases for the MERS-CoV outbreak, available on the intranet.

IDEP-MERS-CoV Riyadh 20 May 2014					
PHASE I					
Recommendation	IDEP-MERS-CoV Riyadh 20 May 2014				
Please refer to the	PHASE II				
Patient triage and	IDEP-MERS-CoV Riyadh 20 May 2014				
a. At the ER	PHASE III				
b. At PHC and ACC	Recommendation	Task/Description	Responsibility	Comments	Reporting To
	Please refer to the above general recommendations applicable to all phases.				
	Patient triage and discharge management				
a. At the ER	• Will follow ECC Bleedout Management Plan (Adult/Pediatric), (PCT).	• Middle Field Hospital should be considered for isolating confirmed cases and as a back for ICU admissions.	Dr. Hajal		Executive Director, Medical Services and Chief Medical officer
b. At PHC and ACC	• Non-essential outpatient visits will be postponed during IDEP phase III to prevent spread of the contagious organisms and to facilitate staff.		Dr. Farhan And Dr. Debas		Executive Director, Medical Services
c. Patient placement upon admission	• Upon activation of Phase 3: Based on the number of cases and the national plan, patient evacuation process will start for 2 additional wards which will be under the discretion of the command center.				
c. Patient evacuation process	Closure of all non-essential hospital facilities	Surgical procedures: • All elective cardiac surgery shall be cancelled with exception by the chairman of the department.	Chairman, Surgery Chairman, OB/Gyn Chairman, Respiratory Chairman, Cardiac Sciences		Executive Director, Medical Services, CIT

## II. The MERS-CoV Outbreak: a blessing in disguise for healthcare transformation

**Dr. Hanan Balkhy**

Executive Director Infection Prevention and Control Department, MNG-HA

Infection prevention and control is a prerequisite to prevent the spread of infections in the health care setting. So the basic understanding of diseases transmission; patient susceptibility to infection on the one hand; and the practices, procedures and treatments that may result in infections on the other hand are important for a successful Infection Prevention and Control (IP&C) Program.

### Elements of a successful IPC



The field of infection control has transformed over the past two (2) decades and Healthcare Associated Infections (HAIs) became unacceptable events. In fact, they are considered inflicted harm on patients by the healthcare system.

The day-to-day HAIs are mainly: central line associated blood stream infections (CLABSI), catheter associated urinary tract infections (CAUTIs), ventilator associated pneumonias (VAP), as well as surgical site infections (SSI). These main infections lead to increased cost to the healthcare system. A more daunting infection control challenge, however, is the management of outbreaks. Outbreaks may arise from within the hospital, due to a contamination of a medication or a blood batch, or even a dialysis machine or bronchoscope. Or an outbreak may arise from poor isolation of an infected patient; who contracted the disease from the community. Regardless, all outbreaks require quick identi-

fication and prompt intervention to break the chain of transmission. In many scenarios outbreaks make headlines on local and international news.

### Factors identified leading to the outbreak

- Over crowded emergency room
- Patient flow issues
- Infection control

Today, all hospital accrediting bodies emphasize the role of infection control. The accreditation process verifies the presence of knowledgeable infection control leadership, available resources, clear practice policy and procedure, knowledge of infection control among healthcare workers, and support of leadership to the infection control program; Figure 1. Many hospitals fall behind in meeting the accreditors' demands. Reasons for that may be: lack of trained infection control officers, lack of resources, lack of expertise in infectious diseases or lack of interest all together.

The Ministry of National Guard - Health Affairs (MNG-HA), for the past 20 years has supported and sponsored the IP&C Program and brought it to a level of true leadership in the Region. Well-referenced policies have been established; surveillance and evidence-based interventions have been initiated for high-risk, high volume procedures. In fact, many of the Intensive Care Units have passed many months with zero CLABSI and VAP events. The robust 10-year hand hygiene (HH) program has gained vast experience in the best ways to improve compliance and has served as a pilot site for many of the World Health Organization (WHO) HH initiative, such as "clean care is safer care". The MNG-HA has established a clear benchmark among the affiliated hospitals, and they as well benchmark with international data such as the Centers for Disease Control



and Prevention (CDC), National Health Surveillance Network (NHSN). The Program has also been able to train infection preventionists in the Region and assist in validating data and assist in investigations and interventions from hospitals within the Region.

### The Basics of Hand Hygiene & cough etiquette

1. MAINTAIN STRICT PERSONAL HYGIENE  
You already know this, you just need to **DO IT EVERY DAY**

**Your 5 moments for HAND HYGIENE**

**Cough etiquette**

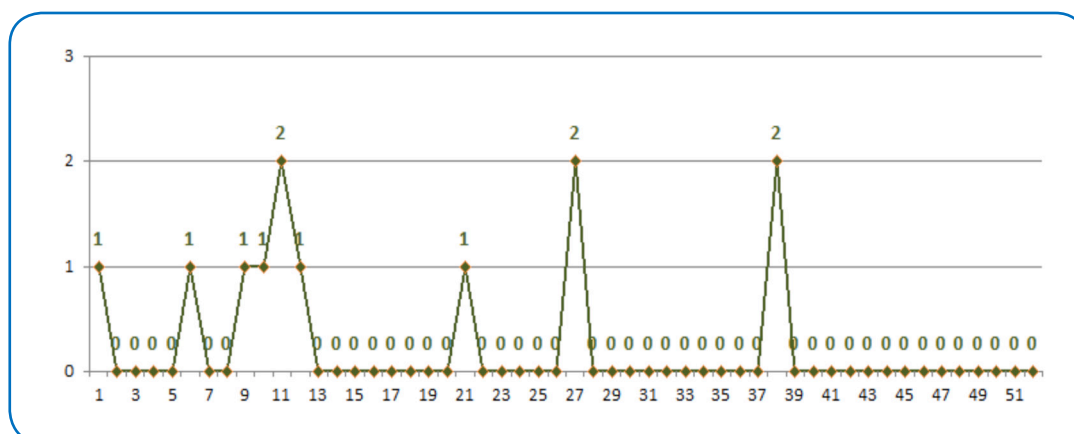
**Short nails, no watches, no jewelry**

**Other basics**

- Avoid touching your **face**
- Avoid touching **patient's items**
- **Do not share** personal items
- **Shower** after work
- Change **uniform** daily
- Keep home **clean** and **ventilated**
- If you feel sick, **do not come to work** – tell your senior over **phone**
- Avoid contact with **sick colleagues**

SOURCE: KSA MoH MERS-CoV Infection Prevention and Control Guidelines, May 2014; the Infection Control Center  
MoH Training Manual – v1.6 20140901

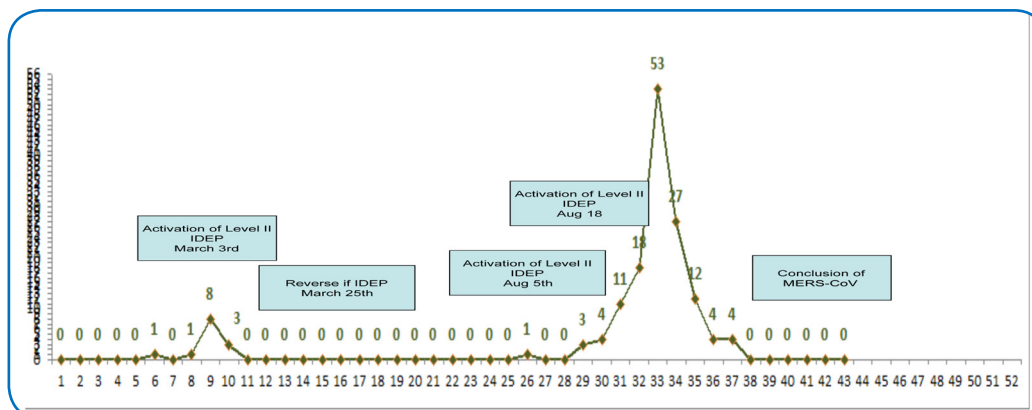
In 2014 KAMC-Riyadh has admitted 13 primary MERS-CoV patients. There was no secondary transmission.



**Number of New MERS-CoV Positive Patients  
per week-2014, KAMC-Riyadh**

A small cluster of MERS-CoV patients was detected in early 2015. However the real challenge was managing the significant transmission that took place on mid 2015.

The MERS-CoV Outbreak in 2015 was managed through a detailed and well-written plan. The escalation process was implemented despite it demanding closure of the hospital. Closure of services took place for the first time since it had been operational. The ripple effect by this closure was sensed not only by our patients who were denied care, but also by the many sister healthcare providers within the city of Riyadh, that were facing larger number of patients.



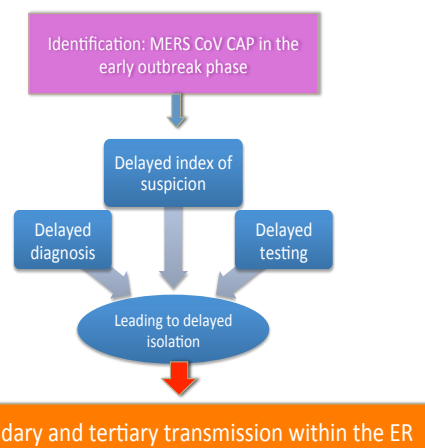
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In the transformation process of the MNG-HA, it was clear that there would be ZERO tolerance for avoidable infection transmission. Infection control principles will be and are being addressed in all processes taking place, from: restructuring the Emergency Care Center (ECC) patient flow process; initiating proper triage systems in the ECC and Ambulatory Care Center (ACC); promptly identifying and isolating patients with acute respiratory infections; decreasing crowding within the facility; and controlling traffic. In addition changes to improve hospitalized patient flow and reducing length of stay are being addressed. Enhancing hospital capacity to address patients with respiratory infections by providing airborne isolation rooms and wards, and eliminating four (4) patient room occupancy and providing a quick turnaround time for diagnostics are underway. Many of the processes being addressed that started before the conclusion of the Outbreak may not be seen by many, as how they relate to MERS-CoV and infection control. In fact, they are all tightly linked to the success or failure of an infection control program. The details of this transformation are provided in the publication of this dedicated Quality & Patient Safety (QPS) Newsletter, and each one of them applies infection control principles in one way or another. The truth of the matter is that, dedicated professionals manage the infection control program; however it needs to be applied by every program and practiced by every individual in the organization.

As a landmark (i.e., first most important initiative incorporated in this current transformation, an educational and competency program was launched.) The program is unique to this organization and will provide a model for addressing the competency of healthcare providers in applying basic infection control principle while caring for patients. A dedicated article addresses this program and the next step would address how we institutionalize it throughout the MNG-HA hospitals. The second most important transformation, by which the success of our infection control program will be determined, is the ability to provide a just and applicable accountability process for healthcare workers. We hope that by this transformation we will reach our goal in "Zero Transmission Risk" of preventable infection.

## Transmission in the ER



\* CAP – Community Acquired Pneumonia



# Role of the Command and Control Center during the MERS-CoV Outbreak

**Dr. Saadi Taher**, Chairman, KAMC-R MERS-CoV Command and Control Center, (Formerly) Executive Director – Medical Services, KAMC-Riyadh

**Ms. Sara Abdel-Karim**, Coordinator, KAMC-R MERS-CoV Command and Control Center Data Manager – Medical Services, KAMC-Riyadh



## THE MERS-CoV OUTBREAK

The MERS-CoV outbreak proved to be a test of our varied systems and processes. The Outbreak tried both our clinical and non-clinical systems. It was a true audit of our institutional resilience. It was a brutal audit.

In accordance with our KAMC-Riyadh Disaster Plan, following the confirmation of an outbreak situation on 5 August 2015, the KAMC-R MERS-CoV Command and Control Center was established on 18 August 2015. At the same time IDEP Phase III was announced in Riyadh. Chaired by the Executive Director, Medical Services and executive leaders from Nursing Administration, Infection Prevention and Control, Laboratory Medicine and Pathology, Patient Services, Inpatient Services, Operations, Emergency Medicine, to name but a few. The Command Center met twice daily throughout the weekdays, once daily over the weekends. Meetings were regularly attended by the Chief Executive Officer, Dr. Bandar Al Knawy and the Chief Medical Officer, Dr. Saad Al Mohrij.

### The aims of the Command Center were to:

1. Act as a unifying body to address, facilitate and oversee, both clinical and non-clinical, outbreak containment efforts
2. Initiate services and hospital re-commissioning strategies and efforts
3. Serve as a central point of information regarding MERS-CoV situational updates
4. Disseminate information regarding updates / developments to staff and patients
5. Develop and implement corrective preventive measures to safeguard against future outbreak threats.

## Closure of the Hospital

The decision was to close the Main Hospital Emergency Care Center (ECC) and Main Hospital Ambulatory Care Center (ACC) to safeguard our patients, staff and greater community on the 18 August 2015.

Analysis of patient cases identified that overcrowding within our ECC played a significant role in the outbreak. A visiting team from the World Health Organization (WHO) concurred with the conclusion. In light of this, all actions taken were done with the aim of containing the Outbreak. Hence, slowing operations via cancelling elective procedures and admissions, and transferring patients to other healthcare institutions were all measures to achieve containment and ultimately culmination of the Outbreak.

One of the most highly visible aspects of the Command Center was on the MNG-HA intranet, via daily bulletins published outlining situational updates for KAMC-R staff. Further along this line the Control Center launched a dedicated Staff Questions and Answers portal, wherein staff queries were addressed by members of the hospital administration and Infection Prevention and Control Department. Additionally, daily tweets via Twitter outlined our ongoing activities and service announcements for the general public.

Perhaps the best way to depict the efforts of the Command Center is via a physical account of our areas of engagement, as outlined below:



Figure: KAMC-R MERS-CoV Command and Control Center

Within the hospital, you may have noticed a change in how we physically run day-to-day operations, via the following infection containment and prevention initiatives (to name a few):

- Creation of dedicated MERS units, wherein access into and out of the units is logged and infection prevention and control precautions are stringently applied and monitored
- Dedicated entry and exit points to and from the main Hospital ACC
- Total revision of how we move patients into, within and out of the main Hospital ECC



- Construction work ongoing outside the main Hospital ECC for the creation of Flu Clinics (respiratory symptom screening and management)
- Allocation of Ward 9 as a screening unit for asymptomatic staff
- Triage stations set up outside the Employee Health Clinic in the main Hospital
- Creation of an Employee Health Clinic to serve King Abdullah Specialist Childrens Hospital (KASCH) staff
- Creation of breakout groups to address the following:
  - Transitioning vulnerable patients through care
  - Establishing patient hotlines for medical and non-medical queries
  - Bed management / allocation group
  - Improving personal protective equipment (PPE) application compliance within critical care units / settings
  - Primary Healthcare Centers as an alternative location for high risk clinics / services
  - In-house and out-of-house oncology patients

### The Re-Commissioning Phase

Once the Outbreak died down, we started to resume our services to the public once again. However, we tread with great caution. Several strategic initiatives have been launched, following a series of meetings with technical experts from the National Health System (NHS) in the United Kingdom and Johns Hopkins University in the United States. Some of these initiatives include, but are not limited to:

- Creation of a series of acute units so as to better manage and move patients through the ECC
- Revision of our bed capacity, wherein, we limit the number of shared rooms or access to those rooms
- Mass infection prevention and control education for all healthcare practitioners to ensure knowledge and competency in compliance with Infection and Prevention Control Policies
- Creation of a Bed Management Department so as to oversee patients' journey within our health system

The Command Center concluded its' activities on Thursday, 10th September 2015 following a consistent decline in the number of confirmed MERS-CoV cases. In its' place is the Outbreak Committee, comprised of a larger group of members of staff, across varying clinical and non-clinical disciplines. The Committee continues to meet twice a week to address, oversee and facilitate outbreak prevention efforts.

# MNG-HA Transformation Initiatives

## The Role of Quality and Patient Safety (QPS) Department

### Dr. Ahmed Alamry

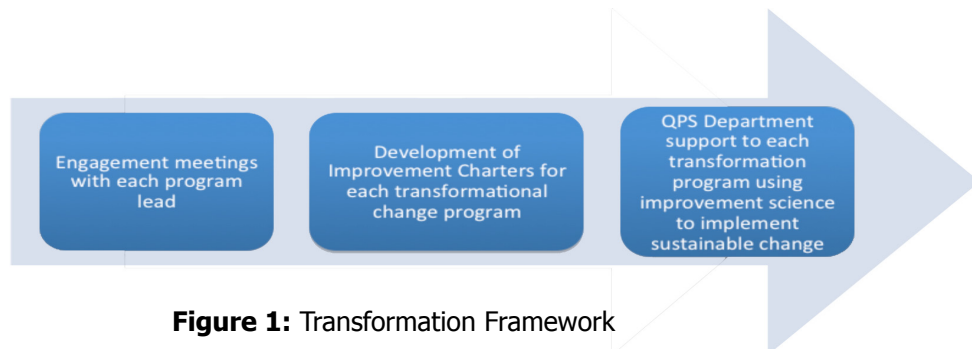
Executive Director, Quality and Patient Safety, MNG-HA

The Ministry of National Guard - Health Affairs (MNG-HA) has embarked on a journey of transformation under the direction of His Excellency the CEO starting with KAMC-Riyadh. The Mission for this transformation is: "To implement a culture of 'right care, right now' across the organization putting the needs of patient's first and empowering staff to make decisions".

To translate the Mission into operational delivery across KAMC-Riyadh, the first tier of transformational improvement will focus on five (5) areas, these are: Bed Management/Patient Flow; Transforming Nursing; Emergency Care Center (ECC); Successful Patient Outcomes; and Obstetrics & Gynecology.

The Quality and Patient Safety (QPS) Department is working in close collaboration with each of the aforementioned areas to support their programs for improvement. Utilizing a structured framework of engagement the QPS Department has initiated regular meetings with each area, to develop their improvement programs and provide ongoing support for the implementation and sustainability of agreed improvement goals.

**Figure 1** displays the activities that have taken place to develop the transformation framework. The purpose of this framework was to provide a structure through which the QPS department will support each department in developing the specifics of their improvement projects and align improvement activities across KAMC-Riyadh.



**Figure 1:** Transformation Framework

### Results from department meetings and project identification

In order for each of the transformation programs to deliver successful and sustainable improvement they must function within a governance structure that ensures standardized reporting of progress for each program and the escalation of barriers to improvement.

From the initial meetings, with each of the five (5) areas, 19 first wave improvement projects were identified:

Area	No. of Projects	Improvement Projects
Bed Management/Patient Flow	4	<ul style="list-style-type: none"> <li>➤ Case management</li> <li>➤ Early disposition of patients post-surgery</li> <li>➤ Automated patient flow</li> <li>➤ Discharge lounge</li> </ul>
Transforming Nursing	4	<ul style="list-style-type: none"> <li>• Observational unit</li> <li>• Fundamentals of care</li> <li>• Comprehensive unit-based safety program (CUSP)</li> <li>• Intentional-Rounding, Falls Prevention)</li> </ul>
Emergency Care Center	4	<ul style="list-style-type: none"> <li>• Observational Unit</li> <li>• Flu clinic</li> <li>• Rapid assessment &amp; management (RAM)</li> <li>• Drive through screening</li> </ul>
Successful Patient Outcomes	3	<ul style="list-style-type: none"> <li>• Transforming care at the bedside (TCAB)</li> <li>• Daily Rounds by MRP</li> <li>• Improving communication – MRP, Patient and Family</li> </ul>
Obstetrics & Gynecology	4	<ul style="list-style-type: none"> <li>• Escalation process</li> <li>• ECC and OB/GYN patient flow</li> <li>• New resident program</li> <li>• Assessment room improvement</li> <li>• Patient safety infrastructure</li> </ul>

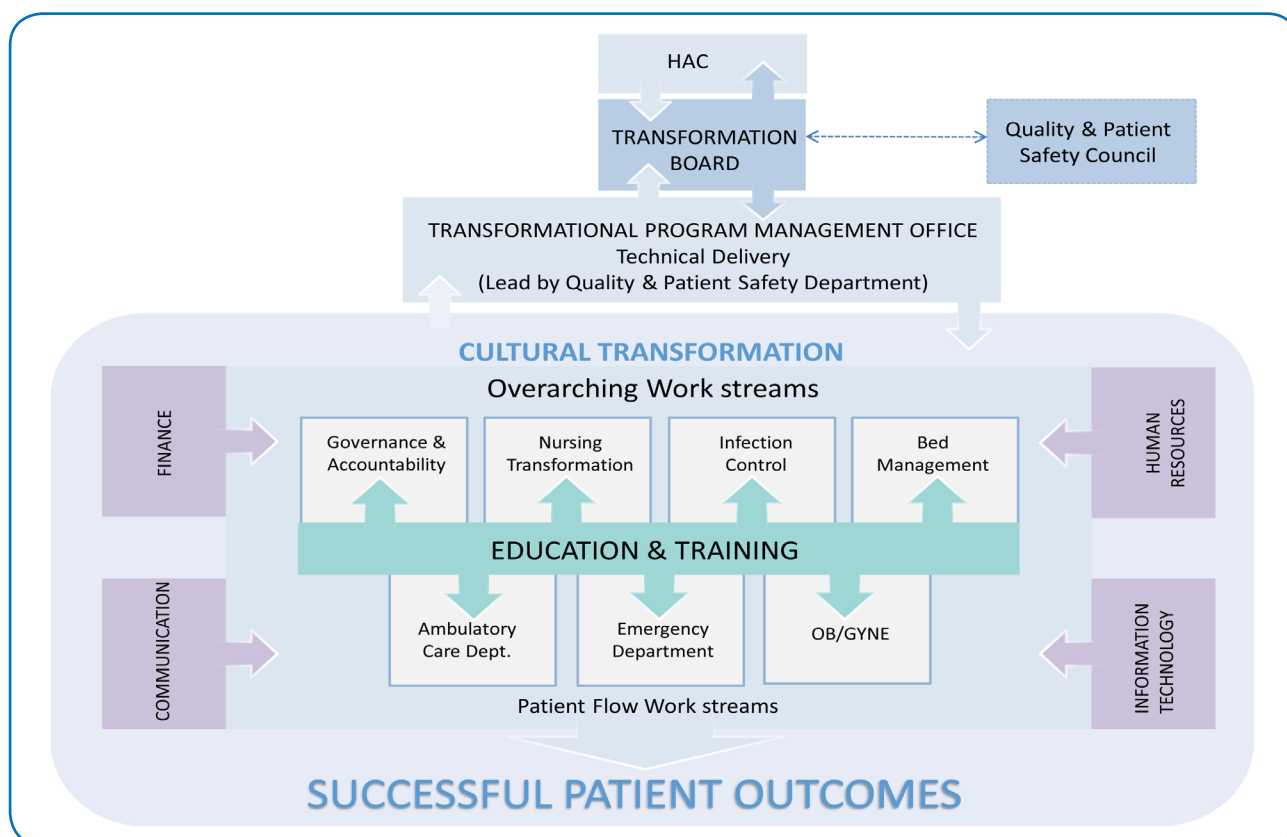
### KAMC-R Transformation project

## Transformation Program Organizational Structure

Each of the improvement projects listed in the Table will be documented using a standardized project charter. These charters clearly set out the case for change, improvement goals, project scope, improvement team members, quality indicators, defect definitions and the timescale for the improvement delivery.

The progress of each transformation project will be reported through the Transformation Program Management Office. The strategic progress of the KAMC-Riyadh Transformation Program will be presented to the Transformation Board, chaired by the CEO. This Board will provide leadership for the entire transformation program.

### KAMC-Riyadh Transformation Structure



## Creating a Learning organization

The sharing of learning from each of the transformation programs across all departments and services is of vital importance toward the development of MNG-HA as a Learning Organization. The QPS Department will support the development of shared learning gained from the implementation of transformational improvement projects from across the organization. This will be facilitated by the use of online information updates, improvement progress reports and the structured improvement projects using a standardized improvement process and documentation (see Figure 2 for an example of an improvement charter).

The QPS Department is also planning to introduce an electronic system to support clinical teams in the development and reporting of their improvement programs. This tool will guide improvement teams through the improvement process using standard templates and enable them to record their improvement activities and easily produce automated progress reports. The tool will also include a search facility enabling every project across MNG-HA to be viewed, or only those projects meeting specific search criteria. Accessible to every member of staff, this tool will support the organizations continuous improvement journey by building on successful improvement programs already implemented within the organization.

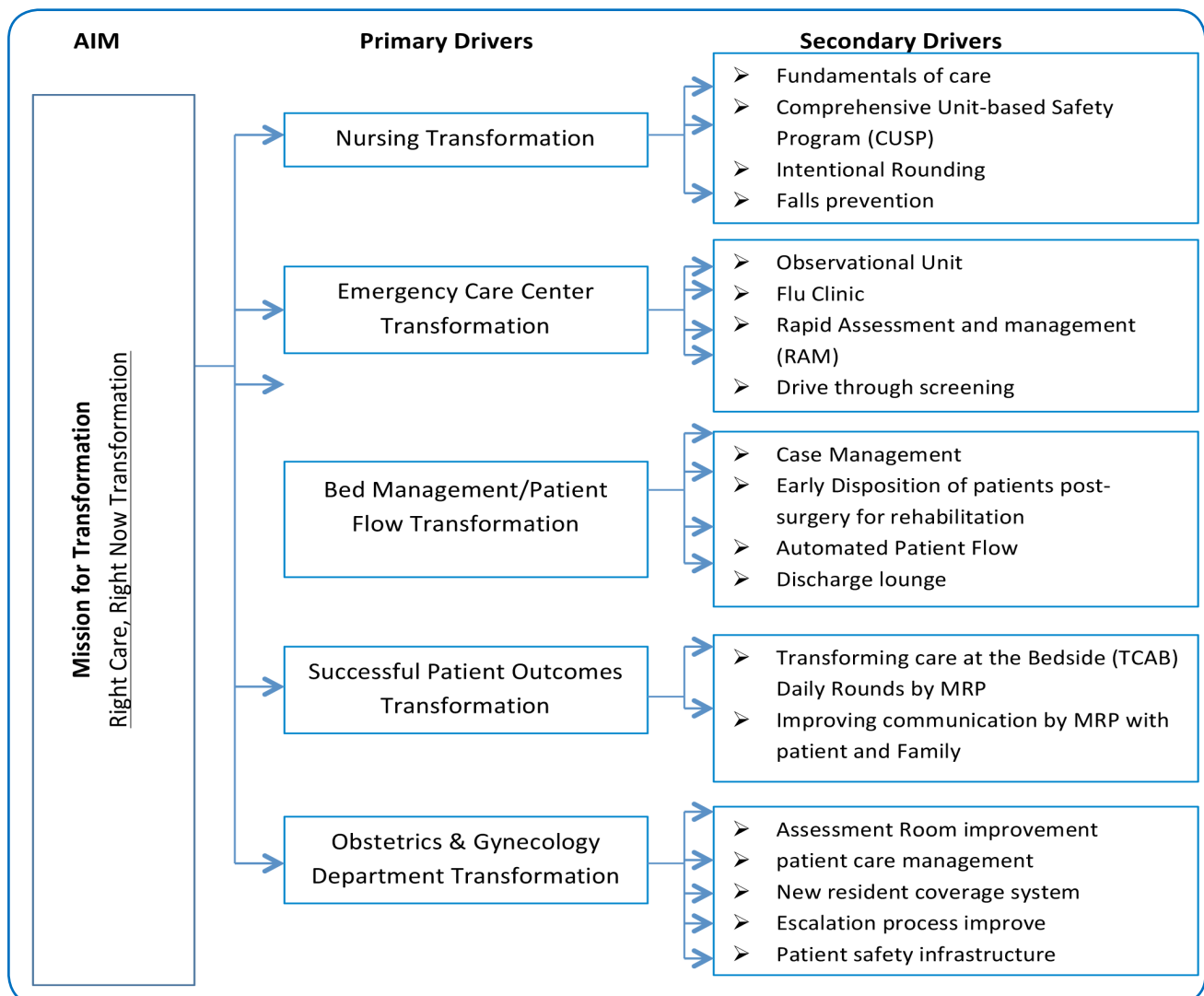


## Summary & Conclusion

MNG-HA have begun a journey of transformational change putting patients at the center of these changes to provide "Right Care, Right Now". This will be achieved through the active engagement and ownership of improvement by all staff working within the organization's many services and departments.

This report describes how the QPS Department are actively supporting all levels of the organization (from clinical frontline staff, to executive leaders) to deliver and sustain the MNG-HA "Right Care, Right Now" transformation Mission.

The scale of the organization's transformation program will ensure that every service, department, team and individual employee will be touched by these changes. The QPS Department will provide ongoing support for all MNG-HA staff to take ownership for improvement and help them to acquire the skills and knowledge necessary to implement these improvements for the benefit of patient care. At the same time the QPS Department will support the organizations Transformation Board with the reporting of progress of each transformational program by coordinating progress information through the Transformation Program Management Office. The charges for each of these bodies are outlined below.



### KAMC Transformation Project primary and secondary drivers

- Updated on a regular basis, program progress and achievement of milestones will be easily identified.

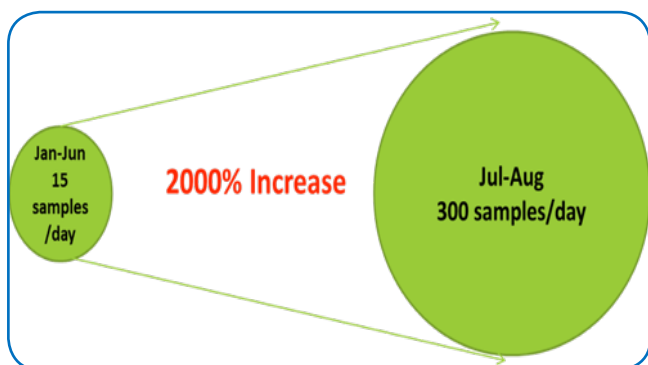
# What To Do In An Infectious Outbreak Situation – Lessons Learned In the Laboratory

**Dr. Abdulaziz Al Ajlan**

Chairman, Department of Pathology & Laboratory Medicine, KAMC-Riyadh

The recent MERS-CoV Outbreak at KAMC-R was a challenging experience for the institution and required co-operation from all sectors of the hospital in order to mobilize resources and overcome this highly infectious epidemic from spreading further. We have highlighted

the Laboratory issues and how we were able to meet the needs of the hospital. In the Laboratory a sudden increase in the demand and number of samples necessitated a coping strategy in all directions, with clear planning and strategy implementations.



**What To Expect:** During the MERS-CoV Outbreak at KAMC-R, a total of 8,000 tests were performed during the Outbreak period. This was a challenge on the resources, equipment and manpower available to perform the test.

**Establish Laboratory Command Centre:** Key personnel and management directly involved in the testing of MERS-CoV were assembled and met twice daily to effectively communicate with the KAMC-R MERS-CoV Command & Control Center to come up with the appropriate action plans in order to mobilize people and resources. It was also important to communicate regularly with all Laboratory staff in order to allay unnecessary fears, maintain morale and utilize optimally available staff.

**Mobilize Resources:** The Laboratory often has to prioritize their workload. In the MERS-CoV Outbreak, extra staff had to be trained, trainees were used to implement simple ordering and processing tasks and skilled staff were required to work extra hours to accommodate round the clock shifts. Staff from other areas, mainly bacteriology, were used to assist in log

ging-in specimens and assist with extraction of nucleic acid. New equipment was acquired through vendors via direct purchase or as a part of the contract.

**Logistics:** A large volume of Viral Transport Medium was released from our original contract and stored in the Laboratory to meet the massive growing demand.

**Turnaround Time:** Results have to be delivered in an expedited manner for timely intervention and actions. This meant sometimes delaying other tests in order to meet the required plan of same-day-result. At a certain point over 500 samples were tested daily.

**Technical Demands:** Whenever a new test is introduced, there will be some tests that give unclear or confusing results. This is to be expected for any test, but a clear algorithm should be developed, either by confirming results on a different test methodology, repeat testing or referral to another laboratory.

**Good Documentation:** There should be clear and extensive documentation of the whole pre-analytical, analytical and post-analytical process to ensure good quality and an effective audit system in the event of errors.

**Be Ready For the Next Outbreak:** Currently the Laboratory is establishing a plan for possible future respiratory virus outbreaks. We are planning to maintain adequate resources, have the ability to scale up operations and meet the needs in a challenging environment. Establishment of Level III Biosafety Containment Laboratory in MNG-HA has also become a priority.

## The ICU Response to MERS-CoV Outbreak at KAMC-Riyadh

**Dr. Yaseen M. Arabi, FCCP, FCCM**

Chairman, Intensive Care Department, KAMC-Riyadh

**Dr. Hasan M. Al-Dorzi**

Section of the Adult ICU and Consultant, Intensive Care Department, KAMC-Riyadh

### Challenges

MERS-CoV infection presents several challenges for the treating staff, including those working in the intensive care unit (ICU).

First, the virus can be transmitted within the healthcare setting. Several major hospital outbreaks have occurred such as in Alahsa (April-May 2013), Jeddah (April and May 2014) and in our hospital (KAMC-Riyadh, August-September 2015). Nosocomial transmission of MERS-CoV is thought to be via droplets, although airborne and contact spread is suspected.

Second, the disease has clinical symptoms and signs that are indistinguishable from other severe acute respiratory illnesses. Therefore, physicians should take a detailed history and keep a low threshold for MERS CoV testing by real-time reverse-transcription polymerase chain reaction (rRT-PCR) in the right setting.

Third, many staff members may not be familiar with the case definition of MERS-CoV infection, such that the diagnosis can be delayed or even missed, which leads to exposing many other patients, visitors and healthcare workers (HCWs) to the infection. The latest outbreak in Korea and in our hospital are examples.

Fourth, caring for these patients in the ICU represents a substantial exposure risk to ICU staff. Many MERS-CoV patients develop Acute Respiratory Distress Syndrome (ARDS) and multiorgan failure requiring organ support such as mechanical ventilation, vasopressor therapy and continuous renal replacement. Patients with ARDS may need prone positioning and extra-corporeal membrane oxygenation, which add to the intensity and duration of bedside care and exposure risk. Aerosol-generating procedures, such as non-invasive ventilation, suctioning and bronchoscopy further add to the risk for healthcare-associated transmission. Prolonged viral shedding in respiratory secretions, urine and stool may persist for more than 30 days.

Fifth, severe infection and even deaths have occurred in young healthcare workers. The impact of such occurrence in the ICU workforce can be devastating.

### ICU response to MERS-CoV Outbreak

The ICU management of MERS-CoV patients during the hospital outbreak was part of the hospital-wide Infectious Disease Epidemic Plan (IDEP). The Intensive Care Department at King Abdulaziz Medical City-Riyadh responded to the MERS-CoV Outbreak (August-September 2015) by the following:

#### Early identification and diagnosis

Early diagnosis is critical in breaking the transmission chain in the healthcare setting. This requires that HCWs be aware of MERS-CoV case definition. Hence, the approved case definitions were made known to all ICU staff. The diagnosis of MERS-CoV infection was confirmed by real-time rRT-PCR. Commonly tested samples were nasopharyngeal and throat swabs, sputum, tracheal aspirates and bronchoalveolar lavage. It was clear that lower respiratory tract specimens had a higher sensitivity than upper respiratory tract specimens for detecting MERS-CoV and that a negative rRT-PCR, even from lower respiratory samples, did not totally exclude the diagnosis. Hence, repeated testing was required for suspected cases. We standardized the workup of patients presenting with lower respiratory tract infections.

#### Placement of patients with suspected and confirmed MERS-CoV infection

Suspected or confirmed MERS-CoV cases were isolated in single-bed, negative-pressure rooms. Cohorting of MERS-CoV patients in one ICU was performed. The initial cases were placed in the Trauma ICU as all of its eight (8) rooms were single-bedded, negative-pressure rooms. The ICU leadership identified other ICUs as potential placement units and requested that clinical engineering convert the standard rooms in the main ICU and Surgical ICU to negative pressure



rooms, which was done within a short period. As the number of suspected and confirmed MERS-CoV patients increased, the main ICU and then the Surgical ICU were used.

Outbreaks can lead to significant increase in the need for ICU beds. In our ICU, patients without MERS-CoV were transferred to other units or hospitals to increase bed capacity.

## Staffing

The care for MERS-CoV patients was demanding. The nurse-to-patient ratio for MERS-CoV patients was increased from 1:1 to 2:1 for many patients. Additionally, ICU HCWs were frequently given additional tasks, such as monitoring and correcting infection prevention practices of other HCWs. On the other hand, staff safety was considered as a primary goal. Unnecessary exposure of HCWs to infected patients was avoided. Limiting the number of medical and nursing staff caring for these patients was done.

Staff who developed fever, respiratory or gastrointestinal illness were asked not to present to work and to report to the Emergency Care Center (ECC) or the Employee Health Clinic depending on the severity of illness.

## Personal Protective Equipment (PPE)

In our ICU, interim MERS-CoV guidelines published by the Infection Prevention and Control (IP&C) Department were circulated to all patients with symptoms of acute respiratory infection and airborne precautions were applied for all suspected and confirmed MERS-CoV cases. These precautions had been observed to prevent transmission of infection to HCWs during the SARS epidemic. When performing an aerosol generating procedure (i.e., aspiration or open suctioning of the respiratory tract, intubation, bronchoscopy and cardiopulmonary resuscitation), airborne precautions were instituted for all patients.

## Interim MERS-CoV Guidelines

### A. Donning

Kingdom of Saudi Arabia  
Ministry of National Guard – Health Affairs  
Infection Prevention and Control Department

### Interim MERS-CoV Precautions

#### Donning of PPE BEFORE ENTERING the Room

- 1. Perform Hand Hygiene**  
When using Alcohol Based Hand Rub (ABHR), allow hands to dry before moving to next step
- 2. Don fluid-resistant unsterile long sleeved gown**  
Should fully cover torso from neck to knees and should be secure at neck and waist
- 3. Put on a fit tested seal checked N95 mask or PAPR**
- 4. Put on eye protection**  
(Goggles or face shields)
- 5. Put on gloves**  
Extend gloves over the isolation gown

ملابس واقية:  
تتطلب ارتداء الملابس الواقية قبل دخول الغرفة  
تتطلب ارتداء نظافة اليدين قبل زيارة المريض و بعدها

### B. Doffing

Kingdom of Saudi Arabia  
Ministry of National Guard – Health Affairs  
Infection Prevention and Control Department

### Interim MERS-CoV Precautions

#### Doffing of PPE BEFORE LEAVING the Room

- 1. Remove Gloves**
- 2. Perform Hand Hygiene**
- 3. Remove goggles or face shield**
- 4. Remove Gown**  
Unfasten ties, peel gown away from the neck and shoulder, turn it inside out, fold into a bundle and discard.
- 5. Perform Hand Hygiene**
- 6. Remove N95 mask or PAPR**  
"Immediately after leaving the room"  
by holding the band without touching the front side
- 7. Perform Hand Hygiene**

ملابس واقية:  
تتطلب ارتداء الملابس الواقية قبل دخول الغرفة  
تتطلب ارتداء نظافة اليدين قبل زيارة المريض و بعدها

As part of the IDEP, all ICU staff were fit tested for the N95 Respirators and the results were documented. The IP&C Department published interim policies and procedures specific to MERS-CoV for donning and doffing PPE and related visual instructions were provided in every ICU room. Additionally, the IPC Department launched a massive training and competency program for all bedside HCWs. Staff were re-trained on the proper hand hygiene technique and PPE application, including how to don and doff such without self-contaminating. Housekeepers were also trained in proper cleaning techniques and the use of PPE. Powered air-purifying respirators, which did not require fit testing, were made available for staff who failed the N95 Respirator fit testing or had not done it. Training on the use of these respirators was conducted.

The implementation of such infection control measures required having adequate stocks of PPE, such as respirators, goggles, face shields, gowns, and scrub suits. During the outbreak, PPE consumption increased substantially and logistic plans were put in place to ensure a constant supply.

### **Communication with families**

Family visiting patients with MERS-CoV infection was discouraged and the allowed time was five (5) minutes per visitor during a two (2) hour period (1900 to 2100). Family members with symptoms of acute respiratory illness were not be allowed to visit. However, the treating ICU Consultant communicated with the next-of-kin by phone on a daily basis.

### **Conclusions**

Proper care of MERS-CoV patients and prevention of healthcare-associated transmission should be major goals. Early diagnosis and isolation of suspected cases, proper use of PPE, staffing and staff exposure management, capacity surge for negative pressure rooms and integration of ICU plans with the hospital Infectious Disease Epidemic Plan were key elements to achieve these goals.



# Right Care, Right Now

**Dr. Abdulhakeem Al Thaqafi**

Leader, Infection Prevention & Control Training & Competency Program, MNG-HA



**MERS-CoV Right Care, Right Now logo KAMC-R**

The recent MERS-CoV Outbreak led to the closure of our institution as a needed measure to halt further transmission of this disease. This was successfully achieved in a relatively short period of time. However, the re-commissioning of services required multiple interventions and actions to ensure the safety of the process. Wider systemic and organizational issues revealed by the Outbreak were addressed by His Excellency (HE), Chief Executive Officer (CEO) in order to achieve this goal.

These issues included: patient flow; Emergency Care Center (ECC) over crowdedness; and infractions in infection prevention and control practices.

Immediate measures were put in place to rectify the first two (2) issues. On the otherhand, and to address the later issue, a call by H.E. was made to formulate a comprehensive training program to train, assess and audit practices of healthcare workers (HCWs) on 27 September 2015.

Experts in the field of infection control from MNG-HA with international collaboration from the Johns Hopkins Hospital and Health System and the University College London Hospitals, met over two (2) days to articulate the state-of-the-art program.

The program is called "**RIGHT CARE, RIGHT NOW**" MNG-HA Infection Prevention and Control Training & Competency Program.

The Program was launched by H.E. on 29 September 2015 with a vision that there will be no further avoidable transmission events again.

The objectives of the Program are:

1. To provide basic infection control education to all HCWs
2. To review best practices to identify and safely manage our patients
3. To perform hands-on practical training in hand hygiene (HH) practices, donning and doffing of personal protective equipment (PPE) and respirator fit testing
4. To assure every HCWs' personal accountability to start our journey to enhancing patient and colleague safety
5. To assure competency of every HCW in fulfilling the above measures in a periodic manner.



# BRAVING THE FRONTLINES AND HOLDING THE FORT:

## The Role of Family Medicine & Primary Care Clinics in the MERS-CoV Outbreak

**Dr Ali Al Farhan**

Deputy Executive Director, Department of Family Medicine & PHC, KAMC-Riyadh

**Dr Saeed Ur Rahman**

Associate Deputy Executive Director, Community Medicine, Department of Family Medicine & PHC, KAMC-Riyadh

Healthcare workers (HCWs) of KAMC-Riyadh Family Medicine and Primary Care showed tremendous courage when challenged with the MERS-CoV Outbreak, and met every work-related demand from higher management in the time of crisis. This brief report highlights the achievements of the Family Medicine and Primary Healthcare Department, who braved the odds by guarding the tertiary care facilities and its staff from MERS-CoV, while the Outbreak inside the hospital was being dealt with. Obstacles overcome and lessons learned from this crisis are also given in this report, for future readiness of our healthcare institution as a whole, in dealing with a threat that is still out there or other challenges.

**PREPARED AND STANDING GUARD:** From the emergence of MERS-CoV as a threat to the health of our patients in the summer of 2012, to the recent Outbreak in our hospital in August 2015, Family Medicine has been a vigilant sentinel at the frontline of care. A MERS-CoV cluster in spring of 2015 in our hospital made us ever-more alert to the clear and present danger. Family Medicine and Primary Care staff prepared themselves and their patients through health education activities, hand-hygiene education, universal and droplet precautions, for any possible challenge of MERS CoV infiltrating our defenses. Since our clinical staff were ready, we were able to proactively triage patients with respiratory disease symptoms, alert our daily visitors regarding droplet precautions and protect ourselves at work, from the onset of the recent outbreak.

**RIISING TO THE CHALLENGE:** All Family Medicine and Primary Healthcare Clinics (PHCCs) and Urgi Care Clinic (UCC) facilities during the crisis were fully functional and some clinics like Employee Health Clinic (EHC) worked 24/7. Closing down clinics would have compromised care for those patients who are not affected by MERS-CoV and would have created a care-shortage gap leading to another crisis. Instead, we assisted the hospital by reaching out, stretching ourselves and services, by opening clinics

for the employees of the King Abdullah Specialist Children Hospital (KASCH), the King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) and by manning a Mobile Field Hospital situated at the entrance of our Emergency Care Center (ECC) as to effectively and promptly triage patients to other institutions.

**TAKING CARE OF OUR OWN:** Close to 40 HCWs tested positive for MERS-CoV. As their family physicians, our EHC caregivers made it their priority to be available 24/7 for their colleagues, while placing their personal and family needs aside. An additional clinic entirely dedicated for care of employees presenting with respiratory symptoms was opened up, in addition to the regular EHC, and was operated by EHC staff 24/7, risking their own lives in the line of duty.

*Concluding Remarks:* Even though it has been announced that the MERS-CoV Outbreak is over in the hospital, the risk to the primary care frontline staff remains unchanged, as the MERS virus or any other emerging pathogen may still be present. It is imperative for our staff to continue to comply with proper precautions, identifying and applying proper infection control measures.

The leadership of MNG-HA has addressed the importance of providing full support to the Primary Health Care Services by upgrading the facilities, provision of equipment and decentralizing therapeutic privileges, so that our family medicine specialty physicians are utilized to their full potential of in depth care that they have been trained for, and eventually reducing the burden on hospital care. Developed countries health-care systems have already made the transformation of upgrading their primary care, with patient ownership residing with family medicine physicians, who operate clinics as medical homes and have admitting privileges in affiliated hospitals. We hope our transformation program will be quickly and effectively implemented to better meet the needs of our patients.

## DEPARTMENT OF MEDICINE ROLE IN MERS-COV OUTBREAK

**Dr. Salih Bin Salih**

Chairman, Department of Medicine, KAMC-Riyadh



The Department of Medicine (DOM) is a large department at King Abdulaziz Medical City, Riyadh.

Approximately, one third of admissions to the hospital are for the Department of Medicine. Furthermore, most of cases admitted to the DOM are elder with multiple medical problems and some with social and economic issues as well.

A major problem that has been facing the Department is flow of patients, i.e. the patient stays longer due to many avoidable and unavoidable reasons, and also the number of older patients with multiple comorbidities is increasing. Over the period before MERS-CoV Outbreak, the major issue that occurred on a daily basis was bed crisis, i.e. patient admitted but no bed, leading to over crowdedness in the Emergency Care Center (ECC), which was a violation of infectious control measures and standards. The MERS-CoV Outbreak was an unfortunate incident which impacted negatively our patients' care,

smooth running of healthcare delivery and the image of our facility. The Outbreak also had major psychological and professional impact on our healthcare professionals.

Given that almost all of the cases were medical, the DOM was involved with many other departments, in most decision-making and planning taskforces, processes and committees. The DOM was also a member in the KAMC-R MERS-CoV Command and Control Center.

The first step on the first day, the DOM called a Departmental meeting in the small auditorium to begin disseminating information, plans, and update our staff and to address the concerns regarding MERS-CoV. The meeting was attended by DOM staff, Infectious Diseases (ID) Consultants, infection control leaders and executives in Medical Services. The DOM staff were given instructions about best infection control measures, how to diagnose or suspect MERS-CoV and whom they should contact, etc.

The second step was to establish a DOM Medicine Command Group, chaired by the Acting Chairman, DOM. Membership consisted of Heads of Divisions, Residency Program Director, Chair of DOM Discharge Planning Committee, Patient Relations representative, DOM Coordinators and DOM Nurse Managers. The Command Group met every day at 1100, their tasks were:

- To keep DOM staff informed and updated by disseminating all information, decision directives regarding all issues discussed at the KAMC-R MERS-CoV Command and Control Center
- To bring to the KAMC-R MERS-CoV Command and Control Center any concerns by DOM
- Expedite discharges of patients
- Limit admissions as much as possible
- Identify patients for transfer to Riyadh Care Hospital (RCH), Specialized Medical Center (SMC), and to expedite transfer within 2-4 hours
- To expedite dispensing equipment within two (2) hours
- To limit Sitter permit to very restricted indications and only after approval of Chairman of DOM and to re-assess all expired Sitter permits before renewal.
- The Director Clinical Nursing, Medical Care, was charged to make sure that preventive control measures were implemented by physicians, nurses, patients and patient visitors, and to manage the floor during visiting hours, to avoid crowding. If any problematic patients were identified, Military Police and Patient Relation Officers were contacted immediately
- One (1) Administrative Assistant was assigned to keep the Group updated every two (2) hours about discharges and identify all patients who are difficult to discharge
- The DOM Coordinators rounded with the Clinical Teaching Unit (CTU) Team and sub-specialties to identify any patients for possible discharge and/or needing equipment
- Chairman of DOM Discharge Planning Committee rounded daily with Discharge Team and identified and communicated to the Consultants issues related to discharge patients

The DOM Consultants were heavily engaged in executing the recommendation of the KAMC-R MERS-CoV

Command and Control Center and they were doing medical rounds more than once-a-day, sitting with families of patients and trying their best to address all the logistics of discharging patients. This resulted in a daily discharge of 14-24 patients.

Consultants also identified all chronic patients that needed to be transferred to other facilities in coordination with Patient Relations, DOM Coordinator, and Executive Director, Medical Services and his Deputies.

Consultants were also assigned to provide ECC Consults on a 24-hour basis. The Internal Medicine Consultant was physically present in ECC to handle all cases referred to ICU 24/7. This was very effective in increasing the number of patients discharged from the ECC and minimizing admissions to the hospital.

The DOM continued to provide follow up to our patients transferred to RCH, SMC and National Care Hospital (NCH). Two (2) teams made up of two (2) Consultants, Patient Relations, DOM Coordinators visited MNG-HA patients on a daily basis, to address their issues or concerns or those of their families.

The DOM also established a Corona Unit (MERS-CoV) where all patients with confirmed or suspected MERS-CoV were admitted. The team overseeing the care of patients on this Unit was led by one (1) Infectious Disease (ID) Consultant and one (1) Internal Medicine Consultant parallel to patient care, the DOM updated staff concerning any MERS-CoV issues and educated them about infection control and personal protection and prevention measures.

Key individuals in the DOM also discussed plans post MERS-CoV Outbreak, particularly measures to: improve patient flow; avoid discharge delays; establish an acute care unit within the ECC with 24/7 Consultant coverage, establish three (3) upper respiratory "MERS-CoV" Units, four (4) Internal Medicine admission units, ensure Consultant daily engagement in the patient's care, and ensure appropriate use of beds and resources. The Department is also working with other departments in establishing future processes, such as: a drugs / therapy delivery Unit in the Ambulatory Care Center, a Discharge Lounge and rapid access Clinics.

## The Impact of MERS-CoV Outbreak on Clinical Medicine

**Dr. Adel Al Othman**

Leader, Corona Management Team, KAMC-Riyadh



To write about the experience that we had during the month of August and September 2015 will require a good memory to remember the multiple events that took place.

The Division of Adult Infectious Diseases, Department of Medicine (DOM), had to assume multiple responsibilities and new duties to deal with the Outbreak appropriately, putting into consideration maintaining good quality of care, and operating smoothly.

The Adult Infectious Diseases, DOM, was heavily involved in the following actions:

1. We were significantly involved in the Corona Hospital Committee meetings. We later became involved in the frequent meetings of the KAMC-R MERS-CoV Command and Control Center.
2. The division was involved in chairing a Task Force Committee related to the outbreak, and reporting to the KAMC-R MERS-CoV Command and Control Center.
3. The Infectious Diseases Division was heavily involved in gradually opening certain Isolation Wards with the cooperation of Internal Medicine Division, Department of Medicine. We established a system detailing the day-to-day operation of the Isolation Wards. Later these Wards worked under the supervision of the Infectious Diseases Division.
4. At the end of the Outbreak, the Division Head was assigned to be the Director of Acute Respiratory Infection Unit by the Chief Executive Officer, to ensure the establishment of an Isolation Ward, at any given time.
5. The Infectious Diseases Consultation Team was involved in the co-management of most of the patient cases admitted with MERS-CoV infection. Obviously, this led to various discussions and educational efforts about managing such cases.

Actually, we as a department have learned a lot of information at different levels. Consequently, the amount of knowledge we gathered will be used to structure new plans and better policies to deal more effectively the next time, if there is such an occasion.



## Logbook of Emergency Care Center (ECC) Measures Taken: MERS-CoV Outbreak

**Dr. Raed Hijazi**

Chairman, Emergency Medicine Department, KAMC-Riyadh



In the light of the resurgence of MERS-CoV cases attending our ECC the following measures were implemented to minimize exposures and cross transmissions to Patient Sitters, visitors and other patients:

**(6th August 2015 (G)/21 Shawwal 1436 (H))**

### **Restrictions of Patient Sitters for ECC Boarded Patients**

1. Tighter, stricter controls on non-essential Patient Sitters, requested MRP staff to restrict granting Sitters to ECC boarded patients except in extreme cases where watcher presence is critically essential for patient care
2. Requested the Military Police to strictly enforce the standard hospital wards visiting hours for these ECC boarded patients with stricter diligence to ensure compliance that no Sitter is allowed in the area, without the official duly executed Sitter pass and diligent crowd control

**(9th August 2015 (G)/24 Shawwal 1436 (H))**

### **REVISED Flow Management of MERS-CoV Patients**

1. All critical patients (Levels I and II with suspected MERS-CoV) direct to Resuscitation Unit (bed 9 if vacant).
2. The old Pediatric Fast Track will be utilized as a Flu Clinic, only for assessment of all stable patients (Levels III, IV and V) with respiratory symptoms
3. C-Side (airborne infection precautions) and Isolation Room in Rapid Assessment Zone (RAZ) will only be utilized for patients with respiratory symptoms, suspected of MERS-CoV.
4. Any patient in Flu Clinic that requires further management and admission will be sent to C-Side room or if full, then to Isolation Room in RAZ
5. Stretcher patients with respiratory symptoms will be assigned a room in C-Side (2 rooms at least to be kept open for such patients) or if full, then to Isolation Room in RAZ
6. Levels IV and V patients without respiratory symptoms will be sent to Triage Blood Draw Room, assessed by a Physician and triaged to Primary Health Care (PHC) if the patient is stable. If requiring intervention, to be assigned to appropriate area as per Triage Guidelines
7. All possible Level III patient, without respiratory symptoms to be sent to triage assessment area and to be assessed by Physician and assigned to an appropriate area as per Triage Guidelines

8. All MERS-CoV confirmed cases or highly suspected cases should be admitted to the pre-designated cohorting areas: Ward 13 or Trauma Intensive Care Unit (TICU), for cases requiring ICU care

**(10 August 2015 (G)/25 Shawwal 1436 (H))**

**Recommendations of Infection Prevention and Control (IP&C) Department with the Ministry of Health (MoH) Required Changes within the ECC for MERS-CoV**

**A. Adult Emergency Clinic ('old' Pediatric Fast Track)**

1. Assign equipment to each cubicle and disinfect equipment between patients
2. Provide and use disposable stethoscopes for each cubicle or room
3. Remove all fabrics from patient waiting areas
4. Change chair layout in waiting area, to maintain one (1) meter between the chairs
5. Move and relocate soiled linen cart from the corridor of Adult Emergency Clinic

**B. Triage Front Desk**

1. Nurses to use MERS-CoV case definition as checklist to screen patients (IP&C Department will provide case definitions and checklist)
2. To place at ECC entrances trays with masks and MERS-CoV educational material

**C. C-Side**

1. To strictly control access to C-Side

**D. For all ECC areas, stop the use of the plastic gowns (unless clinically indicated) by ECC staff**

**(11th August 2015 (G)/26 Shawwal 1436 (H))**

**MERS-CoV Case Definition - to be distributed to all clinical areas for information and reference by all ECC staff be oriented**

**(16th August 2015 (G)/1 Dhu Al Qa'dah 1436 (H))**

**Long Term Solution for Respiratory Isolation within the ECC**

A. With the increase number of respiratory pathogens causing outbreaks which cause tremendous risk to ECC patient and staff, due to lack of proper respiratory assessment and isolation, it was recommended to restructure the area of the Flu Clinic, and the previous Anesthesia Offices into:

1. Proper respiratory triage and assessment within negative pressure room
2. Create another entrance to the Critical Care area of ECC for ambulance transporting patients with respiratory symptoms, and patients directly to Room 9, negative pressure room
3. Create additional ten (10) negative pressure room with resuscitation capacity to increase the ECC capacity

**(18th August 2015 (G)/3 Dhu Al Qadah 1436 (H))**

**Phase III ECC Closure Flow - to adhere on the implementation Closure Flow as follows:**

1. Airway compromised / hemodynamic instability requiring immediate life-saving intervention to be signed to Critical Care (CC) / Resuscitation Unit
2. Stable patients to be triaged away according to the MoH on-call hospital schedule

3. Oncology and Cardiology cases will be transferred to King Fahad Medical City
4. All suspected MERS-CoV cases will be transferred to Prince Mohammed Bin Abdulaziz Hospital
5. All Gyne and first trimester related issues (not in active labor) will be transferred to Al Yamama Hospital
6. All transfer cases, the Physician is required to complete the Life Threatening Life / Organ Saving Form
7. ECC Consultant to determine the mode / type of transfer (ACLS / BLS Ambulance / private car)

**(23rd August 2015 (G)/8 Dhu Al Qadah 1436 (H))**

### Updated Phase III ECC Closure Flow

1. All ST Segment Elevation Myocardial Infarction (STEMI) with negative history screening for MERS-CoV will activate our Cardiac Catheterization Laboratory (Cath Lab). If patient have suspected MERS-CoV with STEMI, he / she will be treated by thrombolytic
2. Implemented screening tool (MERS-CoV ECC Screening Form) for all patients
3. Established a Hotline, for any patient inquiry from a referral hospital, regarding medical history, allergy and medication history

### MERS-CoV Case Definition

- I. Suspected case (patients who should be tested for MERS-CoV Adults (greater than 14 years)
- II. Acute respiratory illness with clinical and/or radiological, evidence of pulmonary parenchymal disease (pneumonia or Acute Respiratory Distress Syndrome)
- III. A hospitalized patient with healthcare associated pneumonia based on clinical and radiological evidence
- IV. Upper or lower respiratory illness within two (2) weeks after exposure to a confirmed or probable case of MERS-CoV infection
- V. Unexplained acute febrile (greater than or equal to 38°C) illness

**AND**

Body aches, headache, diarrhea, or nausea / vomiting (with or without respiratory symptoms)

**AND**

Leucopenia (WBC less than  $3.5 \times 10^9/L$ ) and thrombocytopenia (platelets less than  $150 \times 10^9/L$ )

### ACUTE RESPIRATORY ILLNESS (ARI) DRIVE-THROUGH SCREENING FORM

Date (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

PATIENT ID LABEL

Time (24:00) \_\_\_\_/\_\_\_\_

Contact No. (Mobile#): \_\_\_\_\_

Name: \_\_\_\_\_

#### Part A:

1. Does the patient have fever or history of fever? ☐ Y ☐ N

#### Part B:

Does the patient have a new onset of any of the following symptoms for 14 days?:

Symptoms	Check all that apply
Shortness of Breath	<input type="checkbox"/> Y <input type="checkbox"/> N
Cough	<input type="checkbox"/> Y <input type="checkbox"/> N
Sore throat or Runny Nose	<input type="checkbox"/> Y <input type="checkbox"/> N
Haemoptysis	<input type="checkbox"/> Y <input type="checkbox"/> N

#### Part C:

- Does the patient have contact history with a suspected/confirmed MERS case in the past 14 days? ☐ Y ☐ N
- Does the patient have contact history with "camel" in the past 14 days? ☐ Y ☐ N

If YES to any two (2) part, Patient should be sent and examined in the ED Isolation Room

**ACUTE RESPIRATORY ILLNESS (ARI) DRIVE-THROUGH SCREENING FORM**

## **SECTION 2 - Reflection on MERS-CoV Events**

### **Standing on the Shoulders of Giants**

**Dr. Sami Yousef**

Consultant, Emergency Medicine Department KAMC-Riyadh

As emergency care providers we take pride in serving the acutely ill, easing patients' sufferings and taking away their pain. Our ability to provide indiscriminating care, coordinate multiple treatments and unique patient advocacy skills has made us everybody's 'go-to' healthcare provider even in the most sophisticated healthcare systems. Everyone knows the doors of the Emergency Care Center (ECC) are always open for those in need and they are counting on it.

For three (3) decades the ECC at King Abdulaziz Medical City - Riyadh (KAMC-Riyadh) has managed to serve its role with unparalleled dedication to provide the highest standards of emergency care to our community. The Department gained a reputation of excellence, recruited the highest caliber of healthcare professionals, trained future emergency physicians and invested in three (3) major expansions to meet the growing demand for emergency services in the Region. Nevertheless, the numbers kept increasing, patient's needs are more complex and the task was becoming increasingly more difficult. The Department's census jumped from 80,000 to over 200,000 annual emergency visits in a matter of 10 years. The maximized hospital occupancy year round did not help and everyone in the ECC was working beyond their means and putting in extra hours. Hallways were utilized, chairs used for evaluation and cubicles designed to hold one (1) bed were handling two (2) beds to make it possible to serve sick emergency patients while accommodating the admitted patients. Despite working at double the actual capacity of the ECC, international standards were always met, patients were sent to the cardiac catheterization laboratory (cath lab) on time, receiving antibiotics within acceptable timeframes and receiving the care they rightly deserve. However, somewhere along the road the line between patient care and the 'right care' was blurred and in our own quest to serve patients we were unknowingly jeopardizing their safety and our own.

On the 18th of August 2015 all of this came to a halt and for the first time in 30 years the doors of the ECC at KAMC-Riyadh were closed. The Middle Eastern Respiratory Syndrome Corona Virus (MERS-CoV) was lurking around for a while now and we gave it an opportunity to attack our system.



The decision was painful and hard, but nonetheless it was the right one to make. Admitting to problems is usually the first step in solving them, and the leaders at KAMC-Riyadh were courageous enough to make that decision and announce it to the public. The well-rehearsed Infectious Disease Emergency Plan (IDEP) helped control the epidemic, guided the hospital response and successfully eliminated the threat.

In the ECC, the past two (2) months gave us an opportunity to reflect on past experiences and take part in pioneering the ambitious transformation process led by His Excellency Dr. Bandar Al Knawy, Chief Executive Officer of the Ministry of National Guard - Health Affairs. Plans were set forth to improve Departmental infection control practices, re-engineer patient flow and eliminate overcrowding. Besides, the extensive education and training of Departmental staff, a number of projects were executed to achieve our goals including the innovative Drive-through Screening Project, the newly built Flu Clinic, and the refurbishing of clinical units.

The dedication and commitment of the ECC staff during these times of crisis was nothing short of amazing and should be recognized. The Department Chairman, Deputy Chairman, Section Heads and Unit Managers were in continuous meetings to ensure the success of the operation. Physicians treating critical patients and securing alternate care sites for sick patients day-in and day-out. Nurses were attending sick patients in the midst of the Outbreak with outstanding courage and disinfecting clinical units by themselves. Administrative staff coordinated patient care and paramedics fearlessly transferring suspected and confirmed MERS-CoV patients. The many success stories I have witnessed made me believe that we are already stronger than we were before the Crisis, and that we will stand tall again as we once were standing on the shoulders of giants.



## Reflections on impact and changes to Nursing Services from the MERS-CoV Outbreak at MNG-HA

**Ms. Veronica Kavanagh**

Chief Nursing Transformation Program

**Ms. Angela Caswell**

Director, Clinical Nursing, KASCH - Emergency Care Center, Nursing Services



During early August 2015 the second and more significant outbreak of MERS-CoV was identified in the Emergency Care Center (ECC), KAMC Riyadh. As a result of serious overcrowding, it was impossible to effectively prevent the spread of infection between patients. The ensuing weeks were devastating and witnessed a radical decision to close the hospital in a brave effort to contain, eradicate and target zero transmission of the spread of the infection. Under the guidance and immediate action of the Chief Executive Officer swift organizational and governance issues were aligned to deal with the closure of the ECC. The hospital began a radical transformation program to identify and correct all barriers to successfully reopen the Hospital.

The impact of the temporary closure was profound. Nursing staff went through a period of trauma and low professional esteem. A great deal of staff counselling and support was required and given where possible to help staff during this difficult and frightening time. Some ECC staff witnessed a colleague become very sick having contracted the virus. Nonetheless, they continued to work, caring for their patients with an admirable degree of stoicism and professionalism throughout. Fortunately, their colleague made a full recovery for which we are truly blessed.

Throughout the Hospital and Ambulatory Care Center (ACC) extensive renovation and cleaning programs were undertaken. Engineering and housekeeping personnel worked tirelessly to assist Nursing Services, and completed projects presenting a new, clean and bright environment for patients and staff.

Training programs were delivered as a collaborative between nursing and Infection Prevention and Control (IP&C) Department. Clinical Resource Nurses (CRN) and Infection Control Practitioners (ICPs) continue to work together to ensure that a comprehensive training workshop for Infection Control and Personal Protective Equipment (PPE) is delivered to every member of the organization.

The ECC staff worked with international experts to review processes and flow models, as well as, re-designing the area to become both practical and aesthetically pleasing.

The Department was re-designed to incorporate a unique and robust screening area, which will ensure symptomatic patients are directed to a purpose built Flu Clinic. The Clinic comprises 18 negative pressure rooms equipped with individual bathrooms. Every member of the team therein has been trained to an advanced level to safely and efficiently manage the patient, detect early signs of infection and treat accordingly. Educational material and advice is provided to patients and their family to prevent the spread of infection for those discharged home or to Primary Health Care (PHC).

A new patient flow model has been implemented in the ECC that opened its doors again on 25th October 2015. The new model supports efficient, safe and effective patient assessment, treatment and care. Internationally agreed standards related to optimal timeframes of 4-6 hours is key to the success of a process designed to facilitate the best possible treatment and care for every patient who attends the ECC. The objective is to ensure that no patient remains in the ECC for more than six (6) hours. During this time, a clear treatment plan must be in place, disposition and bed in appropriate Ward/Unit must be secured to ensure transfer from ECC. (National Institute of Clinical Excellence 2014. NIHR Journal Library Health Service & delivery Research 2015. House of Commons report 2014).

As a result of the MERs-CoV Outbreak Nursing Services has been realigned and have commenced a department-wide Transformational Program focusing on the three (3) pillars for Transformation: Practice; Education; and Leadership.

The objective is to provide safe, efficient and seamless care to every patient, and to improve the patient's experience during his/her journey within the organization.

The journey over recent months has been challenging. Reflection has witnessed that, from the tragedy of the MERS-CoV Outbreak, has arisen a new beginning for staff and the patients we serve.



## Hospital Epidemiology: A Personal Perspective after MERS-CoV Outbreak

**Dr. Thamer Alenazi**

Director, Hospital Epidemiology, Infection Prevention & Control Program, MNG-HA

The most frequent question that I received after the MERS-CoV Outbreak was, "did we have the Outbreak, was it only bad or were there other defects that needed to be addressed?" As everyone knows, outbreaks are multifactorial and many factors usually play a role in starting or continuation of outbreak. The main reasons that led to our break were: overcrowding of our Emergency Center (ECC); the late identification of suspected cases; and inadequate adherence to infection control practices.

The experience we had was an unpleasant one that had led to closure of the hospital (which never occurred since the date of establishment of the National Guard - Health Affairs.) How it taught us many lessons that we could not have learned otherwise. These lessons, after God's will, are hopefully what will prevent us from having another Outbreak of that magnitude.

The leadership of the institution has made a decision and stated it clearly, that the institute is not going to do business the same way it used to in the pre-Outbreak era. This led to a major transformation process and restructuring of services. My role in that transformation process as the Director of the Hospital Epidemiology in the Infection Prevention and Control Department, with the help of my colleagues in the Department, was to make sure that the factors that led to the previous Outbreak were addressed as far as infection control was concerned. That included (but not limited to), ensuring that the policies and procedures of infection control are known to every healthcare worker and appropriately applied and practiced on all patients in the institute.

I will never forget the time, as we worked day and night to achieve the one and only mission which was stopping transmission in the institute and ending the Outbreak. After the Outbreak ended, came the challenge of re-commissioning the Hospital and ensuring that this unpleasant experience would never happen again.

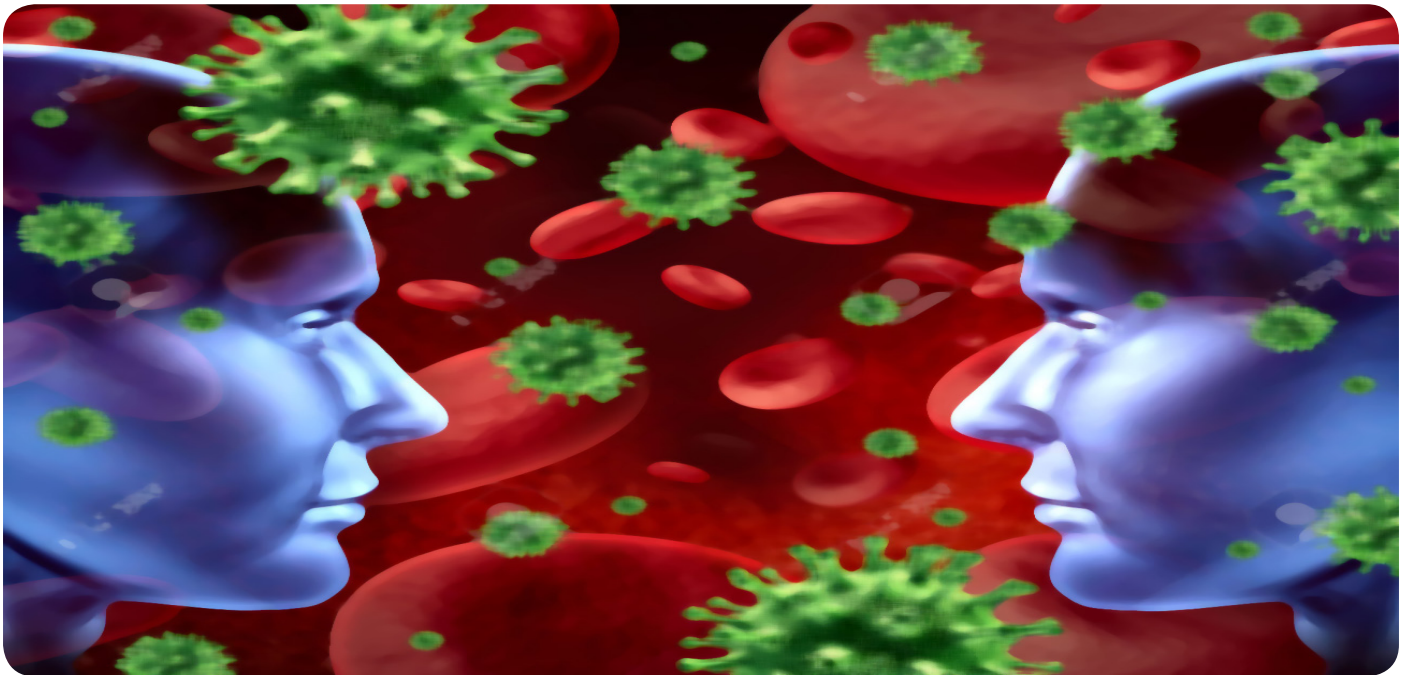
On a personal level, I learned that there are no limits for human capabilities and desire to excel, and where there is a will there is a way. I also realized how teamwork can defeat every obstacle it faces.



# When Those Who Care for The Sick Get Sick

**Dr. Henry Baffoe-Bonnie**

Director, Antimicrobial Stewardship Program, Infection Prevention & Control Program, MNG-HA



For 43 of us, the past three (3) months of this year will be a period in our lives we will not look back upon with undiluted happiness. We were infected with MERS-CoV while in the line-of-duty as healthcare workers. The ensuing agony and stress cannot be expressed in writing. For some of us who were conscious throughout this ordeal, living to wake up another day was gratifying. But the fear of the unknown that lay ahead loomed large over our minds. Each and every one of us has fully recovered, thanks to the support and excellent care we received from a phenomenally dedicated hospital staff.

We thank our coworkers who never lost faith and kept vigil. They called daily to check on us; brought us food and drinks; and kept our distant family members abreast during our incapacitation.

Our most heartfelt thanks to the leadership of this institution who so professionally captained a ship in turbulent waters to a calm shore and are pursuing a visionary agenda in the post MERS-CoV Outbreak period. From the highest level of the leadership, through all ranks, their unalloyed commitment to our dear institution has been palpable. To us who fell prey to this virus, their very personal involvement in our care will never be forgotten.

Any misfortune, such as our recent illness, is always an opportunity for one to reflect and take inventory. What went wrong? How can we prevent a recurrence? What should we do differently in case of another Outbreak? Answers to these questions are emerging as we pick up the pieces and forge ahead. But as we arise from the ashes of this tragedy, one thing is abundantly clear: We cannot return to the way things were.

## **Change is a must.**

We must all contribute in achieving our **Zero Transmission** goal.

And give it our all in providing **Right Care, Right Now!**



# The ABCs of Accountability

## A missing, yet critical, piece in healthcare systems

**Dr. Maha A. Almuneef, FAAP.**

Executive Director of National Family Safety Program  
King Abdulaziz Medical City - MNG-HA

There is a lot of talk about accountability in today's work environment. Most healthcare facilities have the term 'accountability' as one of their core values or even goals, but what does it really mean? Most definitions of accountability revolve around the [obligation](#) of a healthcare worker to [account](#) for his/her [activities](#), accept [responsibility](#) for them, and to [disclose](#) the [results](#) in a [transparent](#) manner. It also includes being present for their full work shift. And if tasks are not completed or aspects of the job are not performed properly, then that healthcare worker will also be responsible for dealing with the repercussions.

Accountability at work is important to any organization's success as a whole, and even more so for healthcare facilities. Every healthcare worker, no matter what level of seniority is equally responsible for contributing to the success and smooth running of the hospital. In order to achieve the goals of the healthcare institution, long and short term, it is important that all healthcare workers within the hospital work together. This builds a sense of responsibility and efficiency as more steps are taken to make things right and avoid mistakes. For employees in non-managerial roles, demonstrating accountability at work proves an employee is a valuable asset to the hospital. For managers, displaying personal accountability will help build a culture of accountability; lead by example. Employees will more likely follow the managements' example knowing that personal accountability is something that even the management is responsible for.

In most healthcare facilities in Saudi Arabia, staff are working across departments and even through language barriers to achieve goals for their organizations. Creating accountability in the department can be a challenging issue in today's environment. However, a good starting point is analyzing the root causes for lack of accountability and then devising a plan to address each concern effectively. There are many causes for lack of accountability, amongst the most prominent through researching is miscommunication from management and misunderstanding from staff. Without clarity and alignment, it is very difficult to create accountability, particularly when staff members do not understand their roles or what is expected from them. Another common issue is prioritization, some healthcare workers struggle to balance tasks and goals and eventually become overwhelmed and unable to complete their tasks on time. It is important to help healthcare workers prioritize their responsibilities in relation to the hospital's overall goals, this will allow staff to feel more organized and competent in the tasks they are assigned. Another reason for lack of accountability is too many red rules in the healthcare system and employees cannot remember them all. Relying on too many red rules can also lead to employees not feeling obligated to behave outside the established rules when dealing with patients. Appropriate use of red rules in healthcare should be limited to those that can always be followed and, if broken, can cause significant harm such as hand hygiene and isolation precautions. Another issue is fear of punishment, if the purpose of accountability is to know who to punish when deadlines are missed or assignments are not completed, this will only succeed in creating fear. No one will be willing to step up, speak out or try something new.

Taking these factors into consideration here are a few steps to take to increase accountability in King Abdulaziz Medical City - Riyadh, MNG-HA. Accountability is not a trait that people are born with, but can be learned using few simple steps:



### **Know Your Role**

It is difficult to understand what to be accountable for if you are not clear about your responsibilities. A quick solution is to talk to your supervisor or manager and get more information. You may also read your job description that should state your tasks clearly.

### **Be Honest & Admit to Mistakes**

"Honesty is the best policy," even though sometimes it is difficult to implement. Accountability does not stop with honesty, if something has gone wrong and you were responsible, then you need to inform your supervisor. Some mistakes in Infection Control can have great repercussions and can be very time sensitive and very costly to the organization. It can even be harmful to you and the people around you: colleagues, patients and even visitors. And hence, dealing with an arising issue in a timely matter is key.

### **Don't Overload and Overcommit**

Be aware of your limitations. Working in a healthcare organization requires a lot of integrity and honesty in what you can and cannot handle. It is better that you recognize your limitations rather than exhaust yourself taking on too much, which may cause you to falter on some responsibilities and in turn may have dire consequences.

### **Learn from Mistakes and Make Changes**

Accountability is the foundation for learning opportunities. When something does not go as planned, ask for feedback and look for ways to do things differently in the future.

An accountable healthcare facility will not appear overnight, but when staff members become more engaged and involved and with the support from upper management, it can be established.

This is your Newsletter and we value your comments. Please recommend Quality Improvement Projects in your area. We strongly encourage you to share patient safety information.

**Secretariat:** Office of the Chief Medical Officer (MC2211) P.O.Box 22490, Riyadh 11426 KSA

**Email:** qpsnewsletter@ngha.med.sa

**Contact No.** 011 8 0 11111 X 43376 Fax No. 011 80 11111 X 43333



# Right Care, Right Now

# ZERO Transmission Risk

Infection Prevention & Control



# Right Care, Right Now



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