

Considering Hajj context, Infectious diseases, Non-communicable diseases (NCDs), stampede/crush, and heat illnesses were among the high-risk hazards and leading causes of morbidity and mortality among pilgrims. The GCMGM conducts an annual SHRA to estimate the health risks at the Hajj, recommend appropriate prevention, and control interventions to ensure health security

**Hajj Strategic
Health Risk
Assessment (SHRA)
1439 H
Executive Summary**

GCMGM, Risk Management Department

List of contributors	
GCMGM	
Dr. Badriah Alotaibi	Director General of the global Center for Mass Gatherings Medicine (GCMGM)
Dr. Ahmed Elganainy	Director of Risk Management Department (RMD)
Dr. Sujoud Ghallab	RMD employee
Dr. Nomai Mukhtar	RMD employee
Collaborating MOH departments	
Dr. Hussain Ghannam	Supervisor General of the Hajj and Umrah Health Services
Dr. Muwafaq Abu Taleb	Director of Makkah Health Affairs for Hajj and Umrah
Dr. Refaat Abu Taleb	Director of Madinah Health Affairs for Hajj and Umrah
Mr. Anas Alodhaibee	Technical assistant for Hajj and Umrah, Makkah General Directorate
Dr. Abdulaziz Almalki	Emergency, Disasters and Ambulatory Transportation General Directorate
Dr. Othman Aneel	Communicable Diseases Control General Department
Dr. Feras Iskandarani	Emergency and Disasters Department- Makkah
Dr. Ali Alshehri	Emergency and Disasters Department- Jeddah
Mr. Majed Almutairi Dr. Essam Albadeen	Emergency and Disasters Department- Madinah
Dr. Ayman Samman	Director Of Health Surveillance Centers at King Abdulaziz International Airport
Dr. Abu Zaid Abdullah Dr. Abdulmohsen Abdoon	Vector-borne Diseases and Common Diseases General Department
Dr. Wael Alsufiyani	Environmental and Occupational Health General Directorate
Dr. Khaled Hassan Saad	Health Centers Affairs General Department

Hajj Strategic Health Risk Assessment 1439 H Executive Summary

Background:

Hajj is a highly visible annual Mass Gathering (MG) worldwide. An average of 2 million Muslims gather every year in Makkah, Saudi Arabia to perform Hajj. Considering Hajj context, infectious diseases, non-communicable diseases (NCDs), heat illnesses and stampede/crush were among the high-risk hazards and leading causes of morbidity and mortality among pilgrims. Moreover, most Hajj deaths occur outside the health facilities and are preventable with implementation of adequate prevention and control measures for public health threats. Thus, there is a need for periodic assessment of the health risks at the Hajj to explore pilgrims' vulnerability to hazards/threats and assess the mitigating capacity of the health system.

Sequel to the yearly Hajj Strategic Health Risk Assessment (SHRA), which was established 1437 H/ 2016; the Global Center for Mass Gatherings Medicine (GCMGM) conducted the 1439 H/ 2018 Hajj SHRA series. It serves as a follow up assessment to identify and prioritize the main hazards during Hajj, explore the vulnerability and the progressing capacities within the Hajj health system and recommend appropriate mitigation strategies and interventions.

Goal:

Estimating the health risks at the Hajj and recommending appropriate prevention and control interventions to ensure health security and legacy

Objectives:

1. Identify and prioritize the main hazards that are potential threats to public health at the Hajj as a MG
2. Explore the vulnerability of the population to prioritized hazards
3. Assess the existing capacities within the Hajj health system

4. Estimate the risks to the population and the impact on the health system
5. Provide a sustainable and comparable assessment method of the Hajj health system capacities.
6. Recommend appropriate strategies/interventions for risk mitigation and planning
7. Recommend the priority research in the field of Mass Gatherings.

Method:

To conduct 2018 (1439 H) Hajj Strategic Health Risk Assessment, Jeddah Tool for Risk Assessment of Religious Mass Gatherings was utilized. The assessment team comprised of GCMGM staff and experts from various Ministry of Health (MOH) departments. GCMGM staff searched literature and available data to identify and prioritize hazards. A meeting was held with the subject matter experts from MOH departments to assess vulnerabilities and capacities within the health system. Experts suggested prioritizing hazards per zone within Hajj areas. Moreover, a new domain was added to the SHRA methodology to assess vulnerabilities and core capacities in a matrix approach that allows stakeholders to compare and contrast the annual progression quantitatively and qualitatively.

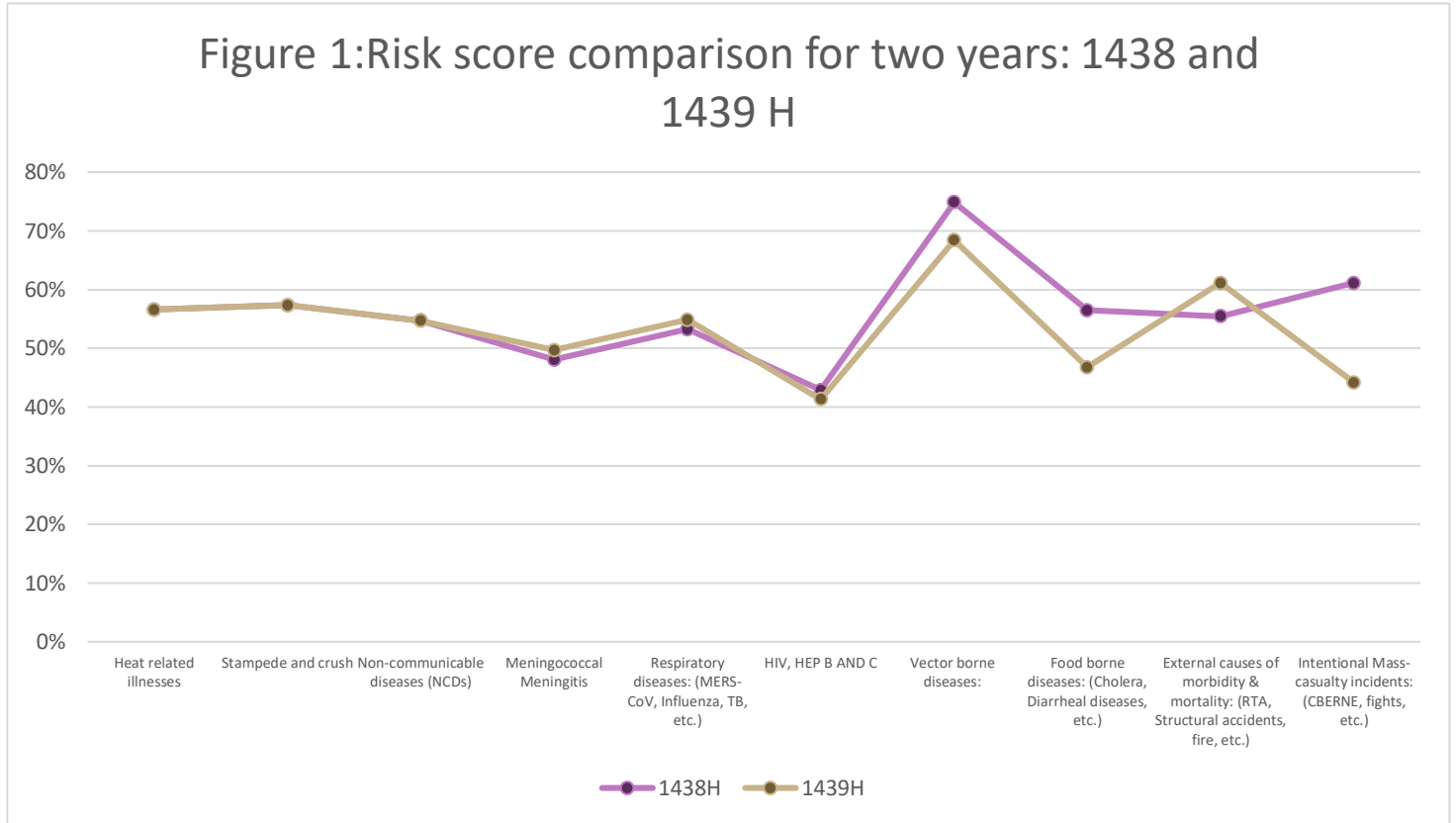
Subsequently, the sum of **risk score** for **each hazard** was calculated, and risks were categorized as “**Low**” “**Moderate**” “**High**” and “**Critical**” using 0-25th, 25th-50th, 50th-75th and 75th-100th percentiles respectively, of the range between the minimum and maximum expected risk score.

Results:

The assessment categorized stampede/crush, heat illnesses, NCDs, respiratory infectious diseases, intentional mass-casualty incidents and vector-borne diseases as “**high risk**” hazards. On the other hand, meningococcal meningitis, human immunodeficiency virus (HIV) and hepatitis B and C and food-borne diseases were categorized as “**Moderate risk**” hazards.

The three-year hazards` comparison showed that most hazards maintained their risk category over the years except for food-borne diseases which decreased from “**High to Moderate risk**”, external causes of morbidity and mortality and vector-borne diseases which changed from “**Moderate to High risk**” category. Overall, the governance, communication and health

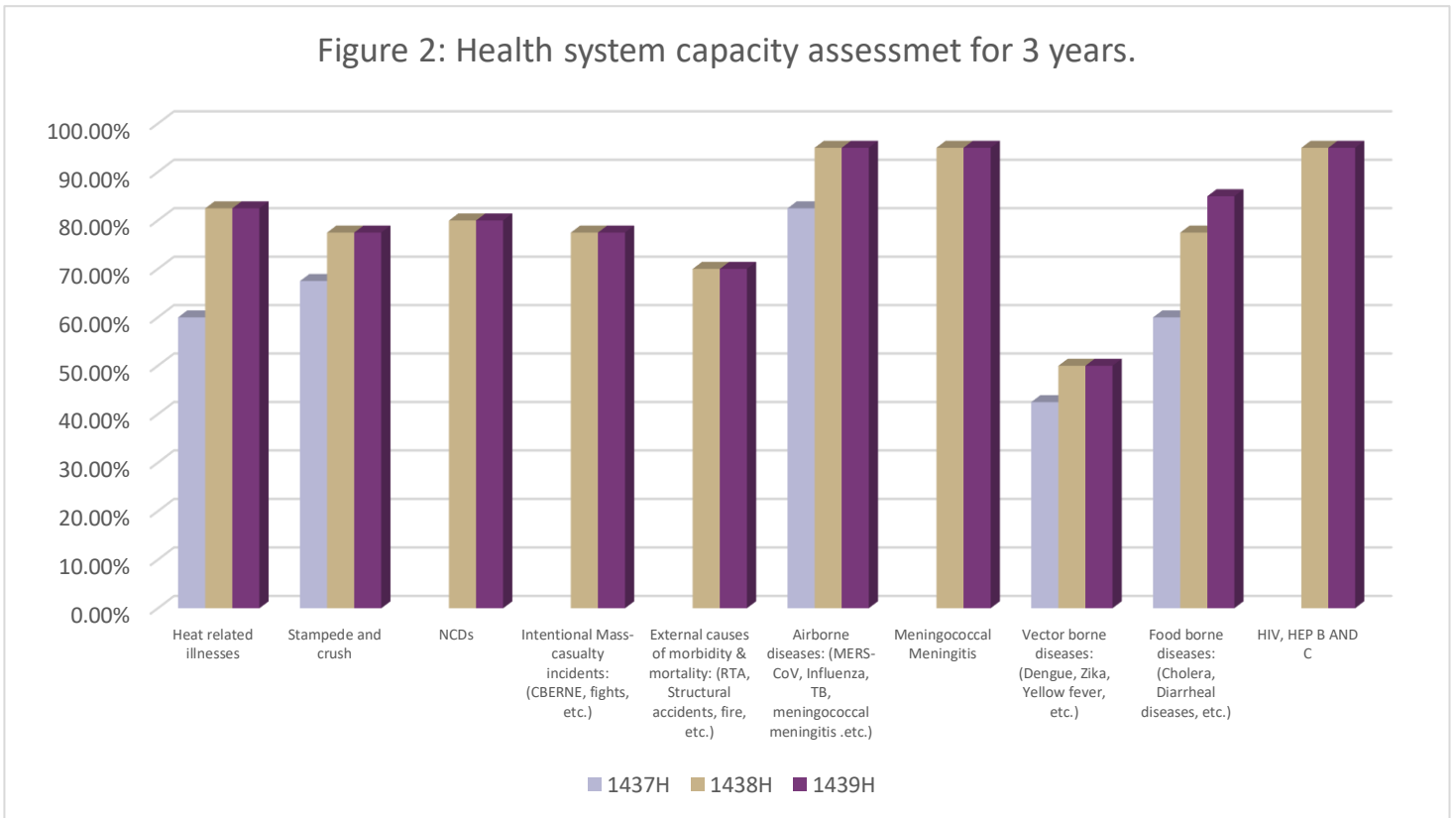
services domains within the Hajj health system showed improvement across all hazards. However, the domain of health information system needs substantial improvement. Figure 1



shows hazard`s specific risk score comparison for 2 consecutive years during Hajj. Although risk is increasing, the health system`s capacity is also improving. Figure 2 shows the building capacity for the studied hazards during Hajj for 3 consecutive years. Certain hazards has no significant change in their capacities for the last 2 years. On the other hand, the capacity of vector-borne diseases requires essential and quick fixes before the coming Hajj.

Conclusion and recommendations:

Kingdom of Saudi Arabia (KSA) has a great and unique experience in MGs` management. Huge efforts were placed to improve the prevention and control of public health threats during Hajj. Significantly, development of the communication, coordination, planning and service provision are prominent. However, the existing capacities should be strengthened in anticipation of the growing Hajj population, which is a key priority for the Kingdom`s vision 2030. Moreover, targeted situation analysis and close assessment of the health system warrant critical and timely progression especially in the demanding areas. The risk assessment recommendations include the following:



RECOMMENDATION	Responsible	Accountable	Supporting	Consulted	Informed
• expand the coverage of the currently utilized Hajj health surveillance systems to cover all PHCs in the Holy Sites	public health department in Makkah and Madinah, PoE	public health department Riyadh	Primary care Dept. Makkah and Madinah	PHC Riyadh	لجنة الحج التنفيذية؟
• scale up the connectivity of the electronic health system in Hajj areas	IT department in Makkah and Madinah	IT department Riyadh	Primary care, Hospital care Dept Makkah and Madinah	preparatory Hajj committees for PHCs, hospital care and IT	لجنة الحج التنفيذية؟
• Establish a unified health information system for Hajj in cooperation with the International medical Offices.	eHealth department in Makkah and Madinah	eHealth department in Riyadh, GCMGM	IT, Statistics dept., PoE,IHR, Public health in Riyadh and regions,	preparatory Hajj committees	لجنة الحج التنفيذية؟
• Communicate with the Medical Offices to conduct Pre-arrival health screening of pilgrims	public health department Riyadh	GCMGM	MoFA, MoI, Hajj and Umrah ministry , Tawafa	Preparatory Hajj committee/ ?MOFA	HE the minister of health
• Implement an early warning, alert and response system (EWARS).	public health department in Makkah and Madinah/ Medical offices GCMGM	Public health department Riyadh	IT, Statistics dept., PoE,IHR, Public health in Riyadh and regions, GCMGM	Preparatory Hajj committees/ ?MOFA	WHO
• conduct Health promotion among pilgrims for medication compliance and self-monitoring such as glucose check and blood pressure measurement; should be mandatory implemented to avoid higher morbidity and mortality during Hajj	Medical offices pre-arrival, Health promotion department and public health department in Makkah and Madinah (department of medical offices)	health promotion department, Public health department Riyadh (GCMGM)	MoFA, MoI, Ministry of Hajj and Umrah , Tawafa	Preparatory Hajj committee/ ?MOFA	MOFA/ supervisory Hajj committee

<ul style="list-style-type: none"> Educate pilgrims not to share shaving tools. 	<p>Medical offices pre-arrival, Health promotion department and public health department in Makkah and Madinah (department of medical offices)</p>	<p>health promotion department, Public health department Riyadh (GCMGM)</p>	<p>MoFA, MoI, Hajj and Umrah ministry , Tawafa</p>	<p>Preparatory Hajj committee/ ?MOFA</p>	<p>MOFA/ supervisory Hajj committee</p>
<ul style="list-style-type: none"> Communicate with Municipality to organize and license all barbers working in Hajj areas and monitor their compliance with regulations. 	<p>public health department Makkah</p>	<p>Public health department Riyadh</p>	<p>Preparatory Hajj committee</p>	<p>Executive Hajj committee</p>	<p>HE the minister of health</p>
<ul style="list-style-type: none"> Communicate with Municipality to Apply strict regulations on street vendors at Hajj areas 	<p>public health department Makkah (Food safety unit)</p>	<p>Food safety department Riyadh</p>	<p>Preparatory Hajj committee</p>	<p>Executive Hajj committee</p>	<p>HE the minister of health</p>
<ul style="list-style-type: none"> Apply strict regulations for ships and airplanes regarding vector control clearance. 	<p>public health department: POEs/ IHR/ vecotr-borne diseases department in regions</p>	<p>Public health department Riyadh-IHR</p>	<p>preparatory Hajj committee</p>	<p>MOFA, civil aviation</p>	<p>HE the minister of health</p>
<ul style="list-style-type: none"> Improve the diagnostic capacities for foodborne diseases during Hajj 	<p>Laboratory department in Makkah and Madinah</p>	<p>public health department in Makkah and Madinah (food safety unit)</p>	<p>laboratory department and public health in Riyadh</p>	<p>preparatory Hajj committee</p>	

<ul style="list-style-type: none"> improve the surveillance system of food-borne diseases especially at the level of PHCs and collaboration with medical offices 	public health department (food safety unit and medical offices department) in Makkah and Madinah, PoE	public health department in Riyadh	PHCs,	preparatory Hajj committee	
<ul style="list-style-type: none"> Strengthen coordination and communication with non-MOH stakeholders (Civil Defense and SRCA), particularly for the designation of sustainable emergency response routes. 	emergency department Makkah and Madinah	emergency department Riyadh	preparatory Hajj committee	Executive Hajj committee Municipality	HE the minister of health
<ul style="list-style-type: none"> Enforce the respiratory diseases triage in health facilities especially PHCs. 	IPC Makkah and Madinah	GDIPC and hospital care departments in Riyadh	PHC and hospital care departments in regions	preparatory Hajj committee	Medical offices
<ul style="list-style-type: none"> Implement and prepare the isolation rooms and HEPA filters in health facilities early before Hajj to ensure the quality of the services provided. 	IPC Makkah and Madinah	GDIPC, PHC and hospital care departments in Riyadh	hospital care departments in regions	preparatory Hajj committee	Medical supply dept
<ul style="list-style-type: none"> Provide the influenza vaccine as a mandatory requirement for participation (pilgrims) in Hajj. 	communicable disease department, IHR in Makkah, jeddah and Madinah	communicable disease department, IHR in Riyadh	POE	preparatory Hajj committee, ?MOFA	MOFA, Medical offices
<ul style="list-style-type: none"> Strengthen monitoring and detection of HIV, hepatitis B and C cases, especially with the high affluence of pilgrims from endemic countries. 	public health department in Makkah and Madinah	public health Riyadh	Laboratory Departments	preparatory Hajj committee	Medical offices

Specific needs should be provided as mitigation measures for high-risk public health threats in the Holy Sites:

o Communicate with Municipality to provide well-ventilated resting areas in the Holy Sites	public health department Makkah	public health department Riyadh (GCMGM)	Preparatory Hajj committee	Municipality	HE the minister of health
o Communicate with Municipality to provide cool showers in the Holy Sites	public health department Makkah	public health department Riyadh (GCMGM)	Preparatory Hajj committee	Municipality	HE the minister of health
o Communicate with Municipality to Provide fireproof tents in Arafat.	public health department Makkah	public health department Riyadh (GCMGM)	Preparatory Hajj committee	Municipality	HE the minister of health
Health authorities are encouraged to enhance the management system of vector-borne diseases in the means of:					
o Improve the utilized plans and guidelines of vector-borne diseases	vector-borne department in Makkah, Jeddah and Madinah	public health Riyadh (vector-borne department)	Municipality, Hajj and Umrah, Tawafa	Metrology, Civil aviation	preparatory Hajj committees
o Increasing the number of health workforce of vector-borne diseases unit	vector-borne department in Makkah, Jeddah and Madinah	public health Riyadh (vector-borne department)	Municipality, Hajj and Umrah, Tawafa	Public health institute , Makah, Medina	preparatory Hajj committees
o Improving the laboratory supplies of vector-borne diseases	public health department and laboratory department in Makkah, Jeddah and Madinah	public health, Laboratories General Department Riyadh	hospitals and labs in regions	Medical supply dept. MOH	preparatory Hajj committees

o Communicate with Municipality to improve the quality of vector-control services in terms of utilized spraying materials and monitoring.	vector-borne department in Makkah, Jeddah and Madinah	public health Riyadh	Preparatory Hajj committee	Municipality	HE the minister of health
o Communicate with Municipality to Improve the quality of vector-control services in terms of spraying personnel and monitoring.	vector-borne department in Makkah, Jeddah and Madinah	public health Riyadh	Preparatory Hajj committee	Municipality	HE the minister of health
The prolonged waiting time for immigration services, large proportion of elderly pilgrims, increased demand on health services and high non-communicable diseases (NCDs) and trauma diagnoses among pilgrims warrant immediate improvements in the compromised living conditions of the Pilgrims` Terminal, King Abdulaziz International Airport (KAIA), Jeddah are mandatory before 1439 Hajj season:					
o Communicate with Municipality to increase waiting chairs and washrooms to accommodate the increasing number of pilgrims and visitors.	Health Surveillance Centers at King Abdulaziz International Airport	public health Jeddah, Riyadh	public health Jeddah, Makkah	preparatory Hajj committee	HE the minister of health
o Communicate with Municipality to change the slippery washroom surfaces to prevent trauma and falls among pilgrims and visitors.	Health Surveillance Centers at King Abdulaziz International Airport	public health Jeddah, Riyadh	public health Jeddah, Makkah	preparatory Hajj committee	HE the minister of health
o Communicate with Municipality to avoid the use of irritating cleansing disinfectants to prevent exacerbation of chronic respiratory diseases among pilgrims.	Health Surveillance Centers at King Abdulaziz International Airport	public health Jeddah, Riyadh	public health Jeddah, Makkah	preparatory Hajj committee	HE the minister of health

<p>o Communicate with Municipality to increase the access to food and drinking water in the pilgrims` terminal.</p>	<p>Health Surveillance Centers at King Abdulaziz International Airport</p>	<p>public health Jeddah, Riyadh</p>	<p>public health Jeddah, Makkah</p>	<p>preparatory Hajj committee</p>	<p>HE the minister of health</p>
<p>o Communicate with Municipality to improve the air-conditioning system of the terminal.</p>	<p>Health Surveillance Centers at King Abdulaziz International Airport</p>	<p>public health Jeddah, Riyadh</p>	<p>public health Jeddah, Makkah</p>	<p>preparatory Hajj committee</p>	<p>HE the minister of health</p>
<p>o Increase the capacity of health services to accommodate for the increasing number of pilgrims: number of beds, workforce and ambulances.</p>	<p>Hajj and Umrah department ,Jeddah-Makah</p>	<p>Hajj and Umrah Riyadh</p>	<p>public health department, Makkah, Jeddah</p>	<p>preparatory Hajj committee</p>	<p>Civil aviation, and airport authority</p>
<p>o Communicate with Municipality for early implementation of high quality vector-control activities near the pilgrims` terminal to prevent vector-borne diseases transmission.</p>	<p>Health Surveillance Centers at King Abdulaziz International Airport</p>	<p>vector-borne department Jeddah and Makkah</p>	<p>public health Riyadh</p>	<p>preparatory Hajj committee</p>	<p>HE the minister of health</p>