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COMM 311

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# Hajj and Health

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# Objectives

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By the end of this lecture, students should be able to:

1. Enlist the diseases and health risks related with gathering of Hajj
2. Understand the signs and symptoms and prevention of these diseases (particular emphasis on meningitis)
3. Understand the importance of surveillance and reporting of these diseases at the national and International level
4. Appreciate KSA's efforts to address and recognize the health risks and diseases during Hajj
5. Enlist what medicines and precaution/prevention should be advised for a pilgrim

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- Approximately 2 million Muslim pilgrims from over 180 countries perform the Hajj yearly
  - Both infectious and non-infectious health conditions keep originating from within and outside KSA
  - Without adequate measures, these health risks may weaken global health security and the reputation of the mass gathering.

## Personal Risk Factors

- Age
- Immunocompromised patients
- Lack of immunization
- Health problems / Chronic diseases

## Environmental Risk Factors

- Weather
- Various microbiological agents
- Crowdedness
- Walking for a long distance.

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**Main Health Risks**

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# Based on Hajj strategic health risk assessment:

## Endemic diseases

- Middle East Respiratory Syndrome (MERS)
- Dengue
- Brucellosis

## Imported threats

- Meningococcal meningitis
- Ebola virus disease (EVD),
- Zika
- Malaria
- Cholera

## Pandemics or common threat at mass gatherings

- Seasonal influenza
- Pulmonary TB
- Measles
- Hepatitis B
- Hepatitis C
- Food poisoning

## Non-infectious threats

- Heat-related illnesses
- Crush/stampede
- Non-communicable diseases (NCD)
- Motor vehicle crash
- Structural failure
- Intentional injuries



## Infectious Threats



**2 Specific Health Risks:  
Infectious Diseases Threats**

# 2.1 Meningococcal Meningitis



# Meningococcal Meningitis: Overview

- Meningococcal meningitis outbreaks are often reported in 26 countries that make up the African Meningitis Belt.
- Many of these countries have large population of Muslims who participate in the Hajj.
- Historically, 2 international Hajj-related meningococcal disease outbreaks were reported in 1987 and 2000/2001 (The latter resulted in > 400 cases, with more than 40 deaths in 16 countries.).



# Meningococcal Meningitis: Overview

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- No Hajj-related outbreaks of the disease have been reported ever since, **partly due to the preventive measures implemented by the MoH, including mandatory meningococcal vaccination.**
- However, **Meningococcal meningitis is still considered a significant public health threat** at the Hajj because:
  - overcrowding facilitate spread of the disease, and
  - the tendency for healthy people to remain carriers of the bacteria even after vaccination

# Meningococcal Meningitis: MOH Recommendations

- 1. All pilgrims/visitors aged 2 years and above, Hajj and Umrah workers and residents of Makkah and Medina are required to submit a certified proof of vaccination with either an ACYW135 conjugate meningococcal vaccine or the ACYW135 polysaccharide meningococcal vaccine, administered not less than 10 days before arrival or onset of Hajj/Umrah**
2. The certificate validity period for the polysaccharide and conjugate vaccines are 3 years and 5 years respectively. If the type of vaccine administered to a pilgrim is not indicated in the vaccination certificate, a validity period of 3 years would be assumed
3. The latest scientific evidence suggests that conjugate vaccines reduces nasopharyngeal carriage and are safer and more effective for those above 55 years of age
4. The health authorities of pilgrims' countries are advised to ensure the vaccination of their pilgrims within the required vaccine validity period and clearly state the type of vaccine administered on the vaccination certificate
5. The Saudi MoH may administer chemoprophylaxis to some travelers at the point of entry if deemed necessary

## 2.2 Yellow fever

# Yellow fever: Overview

- Yellow fever is endemic in 47 countries in Africa and Central and South America.
- Yellow fever may be associated with mild febrile illness but a small proportion of symptomatic cases develop severe disease leading to death in 50% of cases.
- Due to:
  - the presence of the disease vector (aedes mosquito) in KSA, and
  - with many pilgrims arriving from countries at risk of yellow fever,  
→ potential Hajj-related outbreak and sustained transmission of the disease is a public health concern.



# Yellow fever: Overview: MOH Recommendations

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1. All travelers arriving from countries or areas at risk of yellow fever transmission must present a valid yellow fever vaccination certificate, administered not less than 10 days before arrival for Hajj and Umrah. The yellow fever vaccination certificate is valid for life starting 10 days after vaccination
2. Aircraft, ships and other means of transportation arriving from countries affected by yellow fever are requested to submit a valid certificate indicating that disinsection was applied in accordance with methods recommended by the World Health Organization (WHO).

## 2.3 Poliomyelitis

# Poliomyelitis: Overview

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- Polio causes flaccid paralysis in children aged less than 5 years old.
- Afghanistan, Pakistan and Nigeria are recognized polio endemic countries. The three countries combined contribute about 15% of the total population of international pilgrims at the Hajj!



# Poliomyelitis: MOH Recommendations

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1. Travelers from areas with active poliovirus transmission and from countries at risk of polio reintroduction are required to submit a valid polio vaccination certificate.
2. Travelers arriving from Afghanistan, Democratic Republic of the Congo, Mozambique, Niger, Nigeria, Pakistan, Papua New Guinea, Syria, Myanmar, Yemen and Somalia should present proof of vaccination with at least one of the following vaccines:
  - At least one dose of bivalent oral polio vaccine (OPV) within the previous 12 months and administered at least 4 weeks prior to arrival
  - At least one dose of inactivated polio vaccine (IPV) within the previous 12 months and administered at least 4 weeks prior to arrival
3. Travelers arriving from Afghanistan, Nigeria, Pakistan, Papua New Guinea, Syria, Myanmar, Yemen and Somalia will also receive one dose of OPV at the points on entry in Saudi Arabia

# 2.4 Food and water borne diseases

# Food and water borne diseases (Cholera/Food poisoning ): Overview

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- Cholera bacteria (*vibrio cholerae*) is transmitted through contaminated food and water, especially in areas with inadequate access to clean water and basic sanitation facilities, such as peri-urban slums, refugee camps and disaster areas.
- Cholera causes acute watery diarrhea, which result in severe dehydration and death, if left untreated.
- Historically, cholera was transmitted rapidly across international borders resulting in devastating mass-gatherings related outbreaks in the 19th century.
- Cholera outbreaks are now rare in Hajj, as no outbreaks of cholera have been reported since the 2009 Hajj season.
- Like other mass gatherings, foodborne and water diseases, such as cholera and food poisoning are potential public health threats at the Hajj. Cholera remains a significant health risk due to the arrival of many pilgrims from countries with ongoing cholera outbreaks, such as Yemen and Sudan.

# Poliomyelitis: MOH Recommendations

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1. Pilgrims are not permitted to travel to Saudi Arabia with food for Hajj and Umrah except in small quantities and in canned or well-sealed containers
2. Pilgrims are advised to observe the following
  - Handwashing is recommended before and after eating and after going to the toilet
  - Fresh vegetables and fruit should be cleaned and washed thoroughly before eating
  - All individuals involved in preparing foods for pilgrims should ensure food is adequately cooked before consumption
  - Food should be covered, kept in safe temperatures and in safe areas
  - Pilgrims should avoid reserving served meals/partially eaten meals for the next meal time
  - Raw and cooked food should be kept separated
3. Pilgrims should avoid meals served by street vendors
4. Pilgrims should seek care at the nearest health facility, if passing frequent watery stools with or without fever or vomiting

# **2.5 Middle East Respiratory Syndrome (MERS)**

# Middle East Respiratory Syndrome (MERS): Overview

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- MERS is a severe viral respiratory disease.
- Dromedary camels, which constitute 95% of the world's camel population is the main reservoir of the coronavirus (MERS-CoV) and viral shedding in camel secretions and dairy products have been documented.
- No Hajj-related MERS outbreaks have been reported worldwide, since the onset of the epidemic in 2012
- The MERS control and management guidelines are developed and disseminated to relevant stakeholders by MoH.
- Healthcare workers are trained on infection prevention and control (IPC), surveillance and case management well before Hajj.
- Camels are restricted from the Hajj areas to prevent contacts between pilgrims and camels during the pilgrimage.

# Middle East Respiratory Syndrome (MERS): MOH Recommendations

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1. Pilgrims should wash hands with soap and water or a disinfectant, especially after coughing and sneezing, after using toilets, before handling and consuming food, and after touching animals
2. Pilgrims should use disposable tissues when coughing or sneezing and dispose of used tissues in a wastebasket / should wear regular face masks in crowded places
3. Pilgrims should avoid contact with those who appear ill and avoid sharing their personal belongings
4. Pilgrims should avoid visits to camel farms & markets and generally avoid contact with camels
5. Pilgrims should avoid drinking unpasteurized milk or eating raw camel meat or other animal products that are not thoroughly cooked
6. Pilgrims should seek care early in any MoH health facility if feeling unwell
7. Gloves and other recommended personal protective equipment (PPE) should be worn when dealing with sick patients

## 2.6 Measles



# Measles: Overview

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- Measles is a highly contagious viral disease that spreads through coughing and sneezing, as well through close personal contact or direct contact with infected nasal or throat secretions.
- Measles may manifest with a high fever which is often associated with cough, running nose, red eyes and tiny red skin rash starting in the head and upper neck and then progressing up to the hands and feet.
- Outbreaks of measles have been reported in several countries in 2019 due to low uptake of measles vaccine.
- The crowded conditions of mass gatherings, such as the Hajj, may increase the transmission of measles and cause illness among pilgrims.

# Measles: MOH Recommendations

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1. Unvaccinated pilgrims/visitors should receive an appropriate dose of measles vaccine in their home country before arrival for Hajj
2. Pilgrims having symptoms of measles should seek care at the nearest MoH health facility

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## There are other infectious threats such as:

- Influenza (Seasonal)
- Pulmonary Tuberculosis (TB)
- Dengue
- Blood-borne viruses (Hepatitis B, Hepatitis C, HIV)
- Ebola virus disease (EVD)
- Lassa fever
- Zika

➔ Check MOH reference: Addressing the Public Health Concerns At Hajj 2019:  
<https://www.moh.gov.sa/Ministry/About/Health%20Policies/034.pdf>

# **3 Specific Health Risks: Non- Infectious Threats/Risks**

# { 3.1 Heat-related illnesses }

# Heat-related illnesses: Overview

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- Climate conditions in the Kingdom are characterized by extreme heat and limited annual rainfall. Thus heat-related illnesses are recognized public health threats to the Hajj, especially when the Hajj is held in the summer months (April-October).
- Temperatures exceeding 45 C could be reported in Makkah during Hajj. People with chronic diseases and the elderly are at higher risk of complications from heat-related illnesses.
- The burden of heat illnesses during Hajj is highest in Mina. This is because pilgrims spend 3-4 days in Mina, performing the “stone throwing” ritual, which involves walking in largely unshaded areas to the ritual area.

# Heat-related illnesses: MOH Recommendations

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- Pilgrims should stay hydrated by drinking enough fluids (water and juices) regularly
- Pilgrims should avoid direct sun exposure for prolonged period
- Pilgrims should use light-colored umbrella to avoid direct sun exposure
- If possible, pilgrims should delay the performance of certain rituals to the evening period when temperatures are lower
- Pilgrims should have adequate rest and avoid excessive physical exertion
- Countries should create awareness of heat-related illnesses among their pilgrims prior to travel
- Pilgrims that are taking medications that increase fluid loss, such as diuretics, may visit their doctor for dosage adjustment

# 3.2 Non-communicable diseases (NCDs)



# Non-communicable diseases (NCDs): Overview

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- Globally, an estimated 71% of deaths each year are caused by NCDs.
- Cardiovascular diseases, diabetes, cancer and chronic respiratory disease account for 82% of NCD deaths.
- The morbidity and mortality indices for Hajj also reflects the current global trend of NCDs.
- Potentially, many pilgrims arrive to perform Hajj with chronic diseases which could be exacerbated during the pilgrimage.

# Non-communicable diseases (NCDs): MOH Recommendations

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- Pilgrims with chronic diseases, such as diabetes and hypertension should ensure their conditions are properly managed before departure for Hajj/Umrah
- Pilgrims above 45 years of age should have appropriate medical screening/test for chronic diseases in their home countries
- Pilgrims with chronic diseases should travel with enough medications to last throughout the period of travel
- Pilgrims should obtain a full medical report of their health conditions from their home country and present such reports to healthcare workers in Saudi Arabia during clinic/hospital visit
- Pilgrims should ensure they are physically fit before departure for Hajj
- Pilgrims should seek care at the nearest MoH health facility, before running out of prescribed medications, for routine checkup or if feeling unwell

## 3.3 Crowd-related incidents

# Crowd-related incidents: Overview

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- Crush and stampedes are among the most hazardous threats to mass gatherings globally.
- Human stampede is triggered by uncontrolled movement of a large group of people responding to fear or panic situation and escaping from a perceived or actual threat.
- On the other hand, crush is a sequelae of compressive forces that are observed in large crowds, especially when crowd density is  $\geq 4$  persons/m<sup>2</sup>.
- Because pilgrims ought to perform Hajj rituals simultaneously within 5 days at the same location, crowd control is logistically challenging.

# Crowd-related incidents: MOH Recommendations

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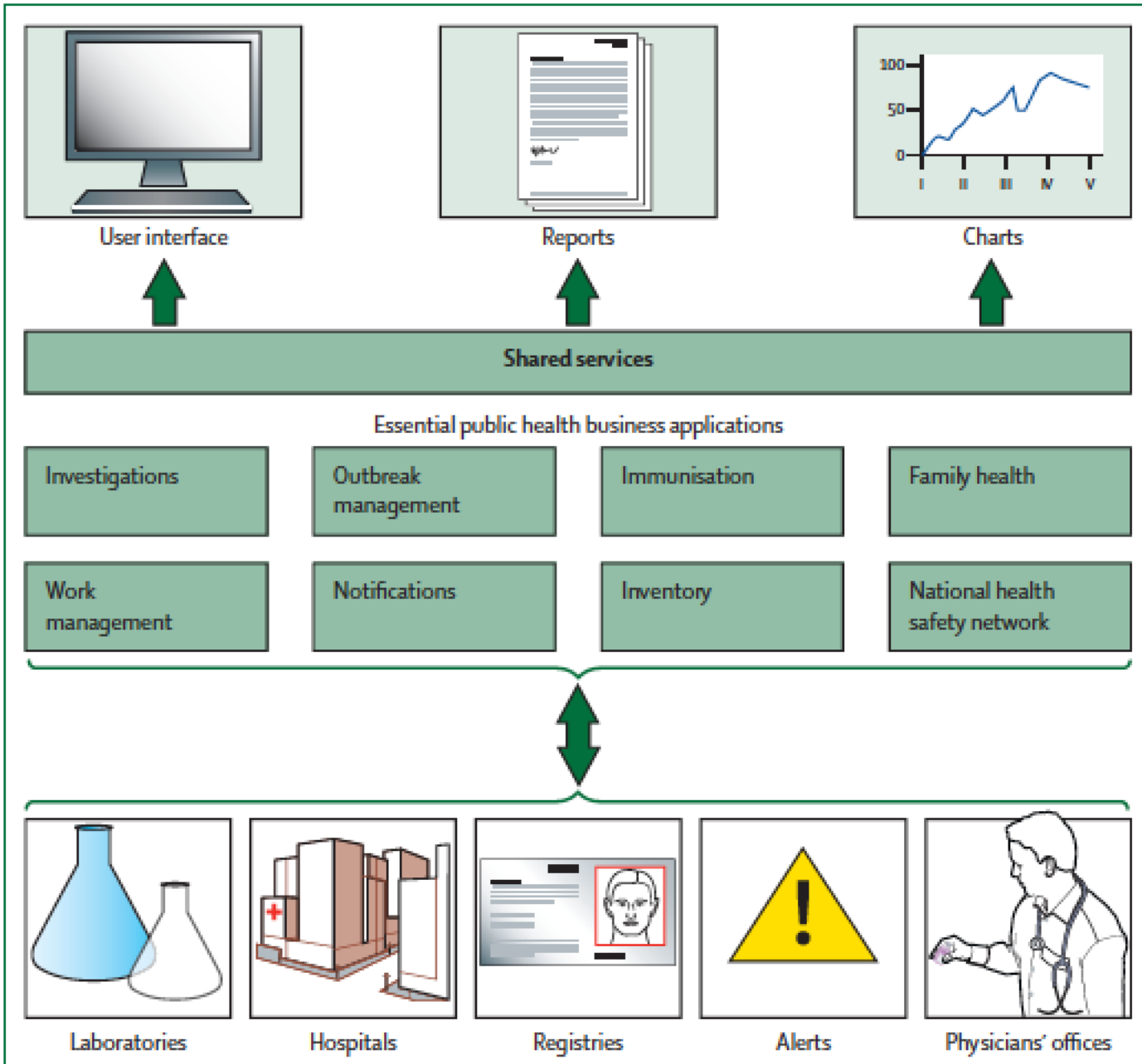
- Pilgrims should take their turns to perform rituals
- Pilgrims should maintain a safe distance behind the pilgrim directly in front
- Pilgrims should avoid pushing others in crowded areas
- Pilgrims should avoid creating any panic in crowded areas
- Pilgrims should ensure they follow road signs and instructions from crowd control officials
- The uni-directional traffic flow in some Hajj areas should be maintained
- Pilgrims should avoid crowded areas when necessary
- Countries should create awareness about crowd-related incidents among their pilgrims and address any behaviour or culture that might create panics or crowd disturbance in the Hajj/Umrah

# **4** Information technology and surveillance at Hajj

# Information technology and surveillance at Hajj

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- All communicable diseases of importance at Hajj are monitored—eg, respiratory tract infections, food poisoning, diarrhoeal diseases, meningococcal disease, viral haemorrhagic fevers (dengue, Alkhurma, Marburg, Crimean Congo, Ebola, and Lassa), yellow fever, polio, and plague.
- The Command and Control Centre in Makkah uses a web-based electronic health surveillance systems for rapid communication, and efficiently initiates appropriate responses during Hajj.







**Let's Recap!**

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**MOH General Recommendations** }

# **5.1 Before departure from home/resident country (pre-Hajj)**

1. Pilgrims should ensure they receive **appropriate doses of the recommended vaccines within the desirable period; meningococcal meningitis is mandatory for everyone in the Hajj area**; polio and yellow fever vaccines are required for pilgrims from certain countries; seasonal influenza is optional but highly recommended
2. Pilgrims are not allowed to carry food items with them to Saudi Arabia.
3. Pilgrims should visit a travel clinic or any recommended health facility for relevant travel advice and assistance
4. Pilgrims with chronic diseases like diabetes and hypertension should ensure that their conditions are well-managed before travel and should carry enough prescribed medicine/ drugs to last throughout the period of travel

# { 5.2 On arrival in KSA (During Hajj) }

1. Pilgrims should adhere to proper respiratory hygiene etiquettes; cover nose and mouth with tissue while sneezing and coughing and discarding used tissues in appropriate waste containers
2. Regular handwashing is recommended for the prevention and control of many infectious pathogens
3. Pilgrims should have regular fluid intake, avoid unnecessary sun exposure and get adequate sleep and rest during Hajj
4. Pilgrims should seek care at the nearest MoH health facility, if running out of medicine, for routine clinic visit or if feeling unwell. The MoH provides free health services for pilgrims/ visitors through 16 hospitals and over 120 primary health centres (PHCS) in the Hajj areas

**5.3 After departure from KSA**

**(Post Hajj)**



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After Hajj, pilgrims should report any unusual symptoms, including high fever, to the health authorities in the home country.

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