**Health Risks and Vaccination in Hajj**

Hajj is one of the five pillars of Islam. People from all over the world come to Mecca, Saudi Arabia, in order to fulfill their religious obligations. It is the duty of every Muslim, male or female. During Hajj, there is annual mass gathering of over 2 million pilgrims from all over the world with the aggregation of people from different environments into small areas.

**Personal Risk Factors in Hajj**

**1-Age:**

Many Muslims wait until they are older before making hajj. Being old increases the risk of many diseases, as pilgrims mostly suffer of chronic illnesses and are on many medications.

Also very young children who are brought with their parents mostly are at a high risk because their immunity is not mature enough to battle the infectious environment.

**2- Immunocompromised patients:**

Patients could be immunocompromised for a number of reasons, which increase the incidence of infections, as they are less capable of battling infections.

* **Genetic:** inherited genetic defects
* **Acquired-Infections:** HIV, some types of cancers including leukemi, lymphoma and
* **Chronic diseases:** end stage renal disease, Diabetes, Cirrhosis
* **Medications:** chemotherapy, radiation, immunosuppressive post-transplant medications.
* **Physical state**: such as pregnancy.

**3-Lack of immunization:**

Pilgrims should take the required vaccines to prevent many serious infections. However some do not and that will put them at a higher risk.

**4-Health problems:**

People who suffer from chronic illnesses such as cardiac, kidney, respiratory diseases and diabetes are at risk of further complications during hajj season.

* Pre-existing cardiovascular disease:
* Many pilgrims are caught up by the spiritual experience of hajj and may forget to take their usual medications. As insulin, antihypertensive drugs.

**Environmental health risk factors during Hajj**

* Climate(temperature , rainfall , ..) sunstroke
* walking for a long distance (Mina and Arafat is 14.4 Km)
* various microbiological agents
* Crowdedness increases the risk of spread of many epidemics & other health problems

**Communicable diseases risk during Hajj**

**The risk of communicable diseases increases in mass gatherings like Hajj. Following infections are well known to occur in the season:-**

**Respiratory Tract Infections**

**Respiratory tract Infections especially the acute infections have high secondary attack rates and statistically it has been estimated that 1 in 3 pilgrims will experience respiratory symptoms.**

* **Upper Respiratory Tract Infections(URTIs) include; influenza A (the commonest organisms causing URTIs) Others (respiratory syncytial virus , herpes simplex virus, parainfluenza virus and adenovirus )**
* **Lower Respiratory Tract Infections (pneumonias) caused by Haemophilus influenza, Klebsiella pneumoniae, and Streptococcus pneumoniae**

**Meningococcal disease**

**Meningococcal infections which is caused by a gram-negative diplococcic Neisseria meningitidis is one of the commonest infections that occurs during the season with a history of several outbreaks . This infection is associated with a high carriage rates with as a study reporting carriage rate as high as 80%**

**Novel coronavirus infection**

**The Novel Coronaviruses is one a big family of viruses that cause colds, and may cause severe acute respiratory syndrome (SARS). The  first detected in April 2012, is a new virus that has never been seen in humans before. Severity ranges from usual lower respiratory infections like fever, cough and difficulty in respiration to  fatal Severe Acute Respiratory Syndrome (SARS).**

**Diarrheal diseases and gastroenteritis**

**Diarrheal diseases and gastroenteritis is a common infection during Hajj , poor hygiene and unwell stored or cooked meals can cause the occurrence of these hazards . In the 1986, the most common cause of hospital admissions for pilgrims was gastroenteritis. Generally, Food poisoning is common during the season.**

**Typhoid fever**

**These infections can be acquired by eating contaminated food, so pilgrims should follow the instructions regarding Protection against food poisoning and contamination [26].**

**Blood-borne diseases**

**In Hajj pilgrims are subject to transmission of infections through the blood. It is well known that pilgrims get their hair cut during Hajj , thus usage of a non-sterile or re-used razor can participate in the transmission of the common Blood-borne diseases like hepatitis B (HBV) and C (HCV), Cytomegalovirus and HIV.**

**Other health problem during Hajj:**

**Cardiovascular risk:**

**Heat stroke:**

**Fire related risks:**

**Trauma risks**

**Vaccinations in Hajj:**

**Hajj and Umrah visitors must have certificates for the following vaccinations before entering the Kingdom of Saudi Arabia:**

**1- Meningococcal Meningitis:**

**Visitors from all countries:**

**Visitors arriving for the purpose of Umrah or pilgrimage (Hajj) or for seasonal work are required to submit a certificate of vaccination with the quadrivalent (ACYW135) vaccine against meningitis issued no more than 3 years and no less than 10 days before arrival in Saudi Arabia. The responsible authorities in the visitor’s country of origin should ensure that adults and children over the age of 2 years are given 1 dose of the quadrivalent polysaccharide (ACYW135) vaccine.**

**2- Seasonal Influenza:**

**The Saudi Ministry of Health recommends that international pilgrims be vaccinated against seasonal influenza before arrival into the Kingdom of Saudi Arabia, particularly those at increased risk of severe influenza diseases, including pregnant women, children under 5 years, the elderly, and individuals with underlying health conditions such as HIV/AIDS, asthma, and chronic heart or lung diseases.**

**3- Yellow Fever:**

**In accordance with the International Health Regulations 2005, all travelers arriving from countries or areas at risk of yellow fever must present a valid yellow fever vaccination certificate showing that the person was vaccinated at least 10 days and at most 10 years before arrival at the border.**

**In case of the absence of such a certificate, the individual will be placed under strict surveillance (quarantine) for 6 days from the date of vaccination or the last date of potential exposure to infection, whichever is earlier.**

**4- Poliomyelitis:**

**All travelers arriving from polio-endemic countries and re-established transmission countries, namely, Afghanistan, Chad, Nigeria and Pakistan regardless of age and vaccination status, should receive 1 dose of oral polio vaccine (OPV). Proof of polio vaccination at least 6 weeks prior to departure is required for visitors from polio-endemic and re-established transmission countries to apply for entry visa for Saudi Arabia and travelers will also receive 1 dose of OPV at borders points on arrival in Saudi Arabia. The same requirements are valid for travelers from recently endemic countries at high risk of re-importation of poliovirus, i.e. India.**

Saudi Arabian health requirements and recommendations for entry visas for the Hajj seasons in 1434

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| **Vaccine** | **Disease/s** | **Causative agent** | **Period of taking the vaccine** | **Notes** |
| Meningococcal vaccine (Quadrivalent) | Meningitis | Neisseria meningitis strains: A, C, W135, Y | Not less than 10 days before Hajj. Not more than 3 years before Hajj. | Obligatory for everyone (even pregnant women). |
| Seasonal Flu vaccine | Flu (Influenza) | Influenza viruses | At least 10 days before Hajj. | Obligatory for everyone (for pregnant: taken in 2nd trimester). Highly recommended for immunocompromised. |
| Respiratory Diseases Vaccines  (Eg. Pneumococcal vaccine) | E.g:   * Pneumonia * TB * Pertussis | * Streptococcus pneumoniae * M. Tuberculosis * Bordetella pertussis | ---- | Obligatory only for immunocompromised |
| Polio Vaccine | Poliomyelitis | Poliovirus | 6 weeks before Hajj.  Another dose is given after arrival to KSA. | Given to people coming from areas where polio virus is endemic. |
| Yellow fever vaccine | Yellow Fever | Flavivirus | 10 days before Hajj. | Given to people coming from areas where yellow fever is endemic (eg: South America) |