Risk assessment for Meningitis infection to Kazakhstan Pilgrim 2016

Background:

Meningococcal meningitis is a bacterial form of meningitis, a serious infection of the meninges that affects the brain membrane. It can cause severe brain damage and is fatal in 50% of cases if untreated. Several different bacteria can cause meningitis. *Neisseria meningitides* is the one with the potential to cause large epidemics. There are 12 serogroups of *N. meningitides* that have been identified, 6 of which (A, B, C, W, X and Y) can cause epidemics. Geographic distribution and epidemic potential differ according to serogroup.

Transmission

The bacteria are transmitted from person-to-person through droplets of respiratory or throat secretions from carriers. Close and prolonged contact – such as kissing, sneezing or coughing on someone, or living in close quarters (such as a dormitory, sharing eating or drinking utensils) with an infected person (a carrier) – facilitates the spread of the disease. The average incubation period is 4 days, but can range between 2 and 10 days.

Neisseria meningitides only infects humans; there is no animal reservoir. The bacteria can be carried in the throat and sometimes, for reasons not fully understood, can overwhelm the body's defenses allowing infection to spread through the bloodstream to the brain. It is believed that 10% to 20% of the population carries Neisseria meningitides in their throat at any given time. However, the carriage rate may be higher in epidemic situations.

Prevention

There are 3 types of vaccines available.

- Polysaccharide vaccines have been available to prevent the disease for over 30 years. Meningococcal polysaccharide vaccines are available in either bivalent (groups A and C), trivalent (groups A, C and W), or tetravalent (groups A, C, Y and W) forms to control the disease.
- For group B, polysaccharide vaccines cannot be developed, due to antigenic mimicry with polysaccharide in human neurologic tissues. The first vaccine against NmB, made from a combination of 4 protein components, was released in 2014.
- Since 1999, meningococcal conjugate vaccines against group C have been available and widely used. Tetravalent A, C, Y and W conjugate vaccines have been licensed since 2005 for use in children and adults in Canada, the United States of America, and Europe.

The extended meningitis belt of sub-Saharan Africa, stretching from Senegal in the west to Ethiopia in the east (26 countries), has the highest rates of the disease. The 26 countries include: Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Côte

d'Ivoire, Democratic Republic of Congo, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, South Sudan, Sudan, Tanzania, Togo and Uganda. The risk of meningococcal meningitis epidemics differs within and among these 26 countries.

Global profile; meningitis outbreaks:

Although the last outbreak of Meningitis in kingdom of Saudi Arabia was on 2000 during hajj season, a strict preventive and surveillance measures in place
Over last 15 years , more than 50 reported outbreaks globally, more than 95% occurred in Africa meningitis belt, with last 4 outbreaks **during 2015 occurred in Niger, and Nigeria**

Kazakhstan meningitis situation:

- Since 1995 till 2015: only 3 cases of meningitis was reported on 2007.as per official WHO records
- Although in media report August 2014, Meningitis been reported: 78 cases at Karaganda city , but no official confirmation nor report .
- No regular vaccination program against Meningitis is implemented in Kazakhstan
- Herald immunity is expected to be low.

Hajj 2016 Context:

Demographical data:

- 2 Million pilgrim in total
- Expected around 86,805 pilgrims from Nigeria, major country in the Africa meningitis belt, joining approximately 98,721 from the rest of the countries in Africa belt.
- Expected Kazakhstan pilgrim around: 4960 hajj

Risk related data:

- Weather: temp average : 47 degree, Humidity average : 45%
- Crowd related: crowd index: 4 person/ Sq. M, in Arafat- Mena, and may reach 8 person/ Sq. M inside Holy Mosque
- Accommodation: Kazakhstan accommodation in Arafat at area 8, which in close proximity to area 7 where the pilgrims from African belt' countries designated accommodation area
- Separate transportation facilities

- Average vaccination compliance recorded over last 5 years: 81%, as only 19 out of 184 countries were below 90% compliance rate and been notified to ensure the implementation of the health percussions.

Risk assessment:

Reference to the strategic health risk assessment for Hajj 1437, **meningitis outbreak represent a Moderate** Risk during Hajj season, based on the capacity of preventive measures as; of more than 80% of pilgrim are vaccinated, in a situation when the population are not properly vaccinated, the risk is **HIGH** to transmit new organism into a low herd immunity population with un predicted spread

Recommendation:

As a global health security concern, and to prevent emerging disease in previously free population, the recommendation is to follow the health advisory issued in this regards by MOH/KSA as below:

- All Visitors arriving for the purpose of Umrah or pilgrimage (Hajj) or for seasonal work are required to submit a certificate of vaccination with the tetravalent (ACYW135) vaccine against meningitis, proving the vaccine was administered no less than 10 days before arrival in Saudi Arabia. Both polysaccharide and conjugate vaccines are valid options.
    - The conjugate meningococcal vaccine certificate is valid for **8 years**. However, the certificate must state clearly that the Hajji actually received the conjugate meningococcal vaccine. If the vaccine type it not indicated in the certificate, then it will be assumed that it is **not the conjugate** vaccine and it the validity of the certificate will to be for **3 years**
- **All efforts should be done to ensure proper implementation of vaccination requirement before arrival.**
- **In extreme rare cases** if Pilgrim arrived and received his/her vaccination in less than 10 days prior to arrival to KSA , they should;
    - At arrival: Should report to airport health authority , receive chemoprophylaxis as ciprofloxacin 1 capsule of chloramphenicol, with instruction to use face mask and avoid crowded areas
    - In case of vaccine availability, Kazakhstan pilgrim, should be treated as a priority to receive the recommended vaccine at point of entry

    - **Strict surveillance** by accompanying medical team and immediate notification of health authority in case of suspected signs and symptoms
- Establishing direct contact with MOH in Kazakhstan for health situation update pre and post Hajj , for early detection of potential cases , with alerting WHO country offices in KSA and Kazakhstan