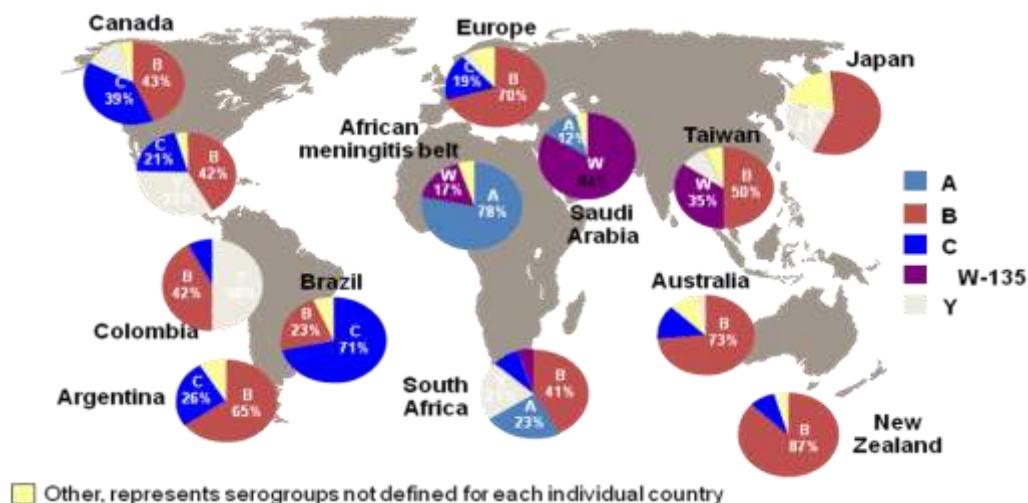


Travel and Meningococcal Disease

Meningococcal infection is a leading cause of bacterial meningitis – an infection of the membrane around the brain and spine – and sepsis – a bloodstream infection^{1a, 2a}. Bacteria that cause meningococcal disease, known as *Neisseria meningitidis* or meningococcus, can be divided into groups, called serogroups³. Five main groups of meningococcus cause the majority of all meningococcal disease cases around the world^{4a}.

Meningococcal disease is a global problem that occurs in all countries^{5a}. The World Health Organization (WHO) and several national governments recommend the use of meningococcal vaccination for people considered to be at increased risk for developing meningococcal disease, including travellers to areas known for outbreaks and Muslim pilgrims travelling to the Hajj or Umrah^{6a, 7a}.

Global Distribution of Meningococcal Disease Bacteria Groups



Australian Meningococcal Surveillance Programme 2005; CCDR 2007; CDC 2006; Chiavetta et al 2007; Chiou et al. 2006; Ciccone et al. 2006; Coulson et al. 2007; EU-IBIS 2004; Instituto Nacional de Salud (Colombia) 2007; Martin et al. 2005; Nicolas et al. 2005; Takahashi et al. 2004.

Why travelers are at increased risk of contracting and spreading the disease

People who travel can be exposed to any group of bacteria that cause meningococcal disease. Travel amplifies the potential to contract meningococcal disease as it exposes individuals to new situations and puts them in close contact with others, such as on crowded trains or at tourist destinations for an extended period of time^{2b}.

Travel also may increase opportunities for the spread of meningococcal disease from one country to another, potentially causing outbreaks. New serogroups can be carried home and introduced to countries (and individual households) in which they previously were not present^{8a}.

For example, following an outbreak during the Hajj in 2000, 90 cases of the same epidemic-causing serogroup were reported from nine countries^{8a}. Of these cases, 34 percent were reported by household contacts of a returning pilgrim and 23 percent were in a pilgrim's immediate community^{8b}.

High-risk regions

The highest rates of meningococcal disease occur in semi-arid, sub-Saharan Africa, an area which extends from Senegal in the west to Kenya in the east^{6b}. Outbreaks in the "meningitis belt" regularly occur during the dry season, which runs from December to June each year^{6c}. In 2009, outbreaks in the "meningitis belt" spread faster than normal. Nigeria was the hardest hit with about 50,000 cases reported⁹.

Annual religious pilgrimages in crowded conditions may increase the risk of contracting meningococcal disease. During the Hajj, more than 2 million pilgrims from 140 countries visit Mecca¹⁰. Outbreaks of meningococcal disease during religious gatherings have led the Saudi Arabian government to require pilgrims to the Hajj and Umrah to receive an A, C, W, Y meningococcal vaccine at least 10 days prior to their arrival in the country^{6a}.



African Meningitis Belt

Serious or life-threatening consequences for travelers

The bacteria that cause meningococcal disease can be passed easily between people through coughing, sneezing and direct contact, such as kissing, by a person who carries the bacteria^{6d}. At any given time up to 5-10 percent of people worldwide can carry the bacteria that cause meningococcal disease in their nose and throat without showing any symptoms¹¹. Close contact with a carrier can increase the risk of acquiring the bacteria by 800 fold^{4b}.

Meningococcal disease progresses rapidly and can lead to death within 24-48 hours of the first symptoms^{6e}. The rapid progression of meningococcal disease means that travelers may not be able to access the medical care necessary to combat the illness in a timely fashion, particularly in countries with limited medical care.

Because the initial symptoms of meningococcal disease are often unspecific and flu-like¹², it can even be difficult for health care professionals to diagnose early. According to the WHO, approximately 5-10% of people who contract meningococcal disease will die, even if they are diagnosed and receive treatment^{6e}. Of those who survive, as many as one in five will suffer devastating, life-long complications, such as brain damage, learning disabilities, hearing loss and limb loss^{1b}.

The importance of effective, long-lasting protection against multiple meningococcal bacteria groups

The dominant groups of bacteria that cause meningococcal disease vary by country and region, and can change over time, making it an even more unpredictable disease^{4c}.

According to WHO, the most effective way to prevent and control meningococcal disease is through the use of a vaccine that offers protection against as many bacteria groups possible and is designed for use in people of all ages^{5b}.

Plain polysaccharide vaccines have been available for nearly five decades but present multiple limitations for widespread use, including that they have little impact on the number of people who carry meningococcal bacteria and do not dramatically decrease the number of people who spread the bacteria. Pilgrims who carried home meningococcal bacteria from the 2000 hajj received polysaccharide vaccine and still infected others in their communities^{13a, 13b}.

Studies show that conjugate vaccines, a technology pioneered by Novartis, may provide longer-lasting protection, reduce carriage and allow for repeated vaccination^{7b, 7c, 14}. Conjugate vaccines can also induce a protective immune response in infants^{7b}, whereas polysaccharide vaccines are not able to protect children younger than 2 years of age.

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