

Travelers at risk: Addressing Pneumonia

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New infectious diseases are emerging at an unprecedented rate which is further exacerbated by human mobility – our ability to travel by planes, trains and ships has contributed to the ability of infectious diseases to spread across the globe rapidlyⁱ. According to the United Nations Health Agency, an estimated 2.1 billion (and growing) airline passengers roam the planet yearly causing infectious diseases to spread faster than ever before. This affects many business travelers who not only have to constantly keep themselves up to date on the health requirements of each country, but who have to deal with the constant change of environment, crossing many time zones and travelling to high-risk destinations that might leave them susceptible to new strains of bacteria.

Recent advances in the medical field have allowed us to protect ourselves against many diseases and infections, thereby affording us the opportunity to live with the comfortable knowledge that we now have the ability to travel free from the fear of contagious diseases. Health is an important commodity not only to individuals and their families, but also in terms of its contribution to the growth of a nation economically. There however exist various diseases which we are highly susceptible to and continue to affect us due to a lack of awareness on the dangers of the disease as well as the methods in which we can combat its onset. One of the most pressing diseases in this category is pneumococcal disease.

Pneumococcal disease which causes pneumonia and other invasive diseases is one of the leading causes of morbidity amongst adults worldwide, with more than half of pneumococcal disease episodes occurring in Asia aloneⁱⁱ. It is a complex group of illnesses which are caused by the bacterium *Streptococcus pneumoniae* (*S. pneumoniae*) with over 90 known serotypes (strains) of the bacteria recorded so far, although only a small subset of this causes the majority incidences of this disease worldwide^{iii,iv}. The bacterium causes invasive infections which include bacteremia/sepsis (bacterial infections of the blood), bacteremic pneumonia, meningitis (inflammation of the membrane surrounding the spinal cord or brain) and non-invasive diseases including pneumonia and otitis media (middle ear infection)^v. It can be a life-threatening disease but it continues to remain under-recognised globally, including here in Malaysia.

Globally pneumococcal disease has been recognised to be a major cause of morbidity and mortality worldwide and is responsible for 1.6 million deaths each year. According to the latest World Health Organization (WHO) data published in April 2011, influenza and pneumonia deaths in Malaysia reached 9,417 or 9.20% of total deaths – influenza and pneumonia being the number three killer behind coronary heart disease and stroke^{vi}. While pneumococcal disease can affect people of all ages, children below the age of five and adults over 65 years of age are at an increased risk of contracting the disease with the elderly being the group hardest hit by

pneumonia each year. In 2002, close to 65,000 people died from pneumonia globally and 90 percent of those deaths were in those in the elderly age group^{vii}.

Pneumonia, an air-borne disease, is transmitted directly from person to person through close contact via respiratory droplets, making air travel an ideal form of transmission. The organism frequently colonises the nasopharynx of healthy people without causing illness. Pneumococcal disease is more common during winter and early spring seasons. Outbreaks of pneumococcal disease are uncommon but may occur in closed populations.

Asia currently is and is projected to continue being, home to a dominant share of the world's population. According to a United Nations report, the proportion of elderly citizens (aged 60 and above) in the region is expected to increase from 9.9% in 2010 to 23.6% in 2050^{viii}. In many developing countries, the number of adults aged 65 years and below is expected to grow by more than 250%, with some of the countries including Phillipines, Malaysia, India and Bangladesh^{ix}. These statistics provide an overview of the alarming rates of the disease in adults and are an indication for the urgent need to address the prevalence of pneumococcal disease and to prevent the onset of pneumonia in the elderly.

In addition to the elderly, additionally Hajj and Umrah travelers over the age of 50 are exceptionally prone to contracting pneumonia during the Hajj prayers. Research has confirmed that pneumonia is the largest cause of hospitalisation of Hajj pilgrims during the Hajj season with more than 19.7 percent hospitalisation rate^x. The Hajj attracts millions of people from different parts of the world who congregate in a limited area for an amount of time, leading to the widespread of infectious diseases and epidemics. As pneumonia spreads from person to person through respiratory droplets from sneezing or coughing, Hajj provides the ideal environment for the spreading of the disease.

Despite the disease's adverse effects, pneumococcal disease is a vaccine-preventable cause of death. Vaccines have come a long way from its conceptualization from two centuries ago. The vaccines being developed today are not only successful in keeping the disease at bay, it is also a cost-effect public health tool. There have been more than 30 common infectious diseases which have been prevented owing to immunization programs, and they have since helped in averting long-term disability and preventing an estimated 2.5 million deaths a year^{xi}.

There exist several pneumococcal vaccines today that provide various levels of protection. The pneumococcal polysaccharide vaccine protects against 23 strains of pneumococcal bacterium. Advances in the field of immunology has paved way for conjugate technology to be incorporated to the vaccines. The pneumococcal conjugate vaccine protects against 13 of the most common strains of bacteria which causes 80% - 92% of invasive pneumococcal disease worldwide^{xii}. Conjugate technology has the ability to activate several pathways into the immune system and data has shown to induce immune memory which helps the immune system remember the infection and provide sustained protection against it^{xiii}.

In order to protect themselves completely, travelers need to be aware that vaccination is an effective method in preventing pneumococcal disease. There have been constant advancements of the pneumococcal vaccine to improve its protection against more at-risk groups and against additional strains of the disease. The benefits of vaccination outweigh the costs associated with its development and administration. It also is a good economic option as it prevents diseases and hospitalization thus reducing the cost of treatment, care and rehabilitation. Vaccines have truly demonstrated a remarkable history of diminishing the global burden of certain infectious diseases and continue to be the best option in protecting oneself against pneumococcal disease.

Knowing how infectious diseases spread will help travelers protect themselves from getting sick while on their journey and will also reduce the possibility of spreading illnesses to others. For a respiratory illness like pneumonia there are various methods to stop it from spreading^{xiv}:

- Covering the mouth and nose while coughing or sneezing
- Throwing away used tissues (Place them in a trash can or the sick bag when on a flight)
- Washing hands often with soap and water. Wash after using the bathroom, sneezing or coughing, and before eating or touching anything that might be put in the mouth. (Hand sanitizer with alcohol may be used if no running water is available.)
- Do not share drink or food with others.

Remember the old saying, prevention is always better than cure.

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ⁱ The New York Times. Disease Spreading with faster world travel – Accessed 14 April 2013. Available at : http://www.nytimes.com/2007/08/23/health/23iht-health.4.7231596.html?_r=0

ⁱⁱ The World Health Organization. Pneumococcal Conjugate Vaccine for Childhood Immunization – WHO Position Paper. Weekly Epidemiological Record. Vol 82, No 12: 93-104.

ⁱⁱⁱ World Health Organization. Pneumococcal conjugate vaccine for childhood immunization, March 2007-WHO position paper. Wkly Epidemiol Record 2007;12:93-104.

^{iv} World Health Organization. 2004 Global Immunization Data. 2004.1-3.

^v Centers for Disease Control and Prevention. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*. 1997;46(RR-8):1-24.

^{vi} World Health Organization (WHO). WHO Global immunization Data 2008.

^{vii} Adapted from “Pneumonia Vaccine for At risk Groups”. Available at:

<http://www.medicinenet.com/script/main/art.asp?articlekey=40585>. Accessed on 24 August 2012.

^{viii} United Nations. World population prospects: the 2008 revision. Highlights. United Nations; 2009. Selected tables. <http://esa.un.org/unpd/wpp2008/pdf/WPP2008 Selected Tables 1.pdf>.

^{ix} Kinsella K, He W. *US Census Bureau, International Population Reports, P95/09-1, An Aging World 2008*, US Government Printing Office: Washington DC; 2009.

^x Adapted from “Vaccination during Hajj, Umrah, Pfizer launches awareness campaign on Pneumonia”. Available at: <http://www.brecorder.com/business-a-economy/189/1242773/>. Accessed on 3 October 2012.

^{xi} Adapted from “Immunization during Haj to reap major health rewards”. Available at: <http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20120928137715>. Accessed on 2 November 2012.

^{xii} GAVI’s PneumoADIP, Surveillance and Research Report (November 2007).

^{xiii} Pfizer Data on File (DOF). Adult Prevnar 13 USPI. 2011

^{xiv} Adapted from Centers for Disease Control and Prevention : Understand How Infectious Diseases Spread. Accessed on 14 January 2013. Available at: <http://wwwnc.cdc.gov/travel/page/infectious-diseases.htm>