



**Abstract of “Changing trends in Influenza” by Dr. Jude Jayamaha**

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**Introduction**

Influenza is a serious public health problem that causes severe illnesses and deaths mainly in higher risk populations. An epidemic can take an economic toll through lost workforce productivity, and strain health services. Changes have occurred in several aspects of influenza over the past decade.

**Epidemiology**

Seasonal influenza H<sub>1</sub>N<sub>1</sub> has been replaced by H<sub>1</sub>N<sub>1</sub> Pandemic (Pdm) strain and H<sub>2</sub>N<sub>2</sub> no longer circulates. H<sub>3</sub>N<sub>2</sub> co-circulates with H<sub>1</sub>N<sub>1</sub>. In recent years, Influenza B has caused severe disease in several countries (including Sri Lanka) and was the predominant strain in some years and exit to co circulate with influenza A.

Reassortment of H gene in animals (pigs, humans and birds) has lead to novel strains that has caused pandemics e.g. triple assortment Pandemic H<sub>1</sub>N<sub>1</sub>.

Influenza usually causes severe disease in individuals in extremes of age and with risk factors. However pandemic waves (2009 and 2010) and recent epidemic (2013) saw both Influenza A and B causing severe disease in healthy individuals particularly in adolescent, young adults and pregnant females. High index of suspicion is needed in above groups, especially in pregnancy as several deaths occurred in recent outbreak.

Human-Animal Interface - Influenza viruses circulating in animals pose threats to human health. Humans can become ill when infected with viruses from animal sources, such as avian influenza virus subtypes H<sub>5</sub>N<sub>1</sub> and H<sub>9</sub>N<sub>2</sub> and swine influenza virus subtypes H<sub>1</sub>N<sub>1</sub> and H<sub>3</sub>N<sub>2</sub>.

Influenza A(H7N9)- is one of a subgroup of influenza viruses that normally circulate among birds. Until recently, this virus had not been seen in people. However, human infections have now been detected which has caused morbidity and mortality in China.

From April 2012 to Sep 2013, 130 laboratory-confirmed cases of human infection with Middle East respiratory syndrome coronavirus have been reported. The case fatality rate is 45% (58/130). The median

age is 50 years (range, 14 months to 94 years). Most have some underlying medical condition and gave a contact history with confirmed.

### **Surveillance**

Several networks of influenza were initiated around the world and monitor trends in epidemiology, antiviral resistance, health economics etc. More countries, especially developing Asian countries have joined the networks and contributing enormously to surveillance.

‘One Health’ concept by WHO saw many sectors come together for one purpose, studying and monitor Animal Human interface.

**Vaccine** Vaccination is the most effective way to prevent infection. As egg culture based vaccine production takes time and poses a challenge for novel Pandemic strains, novel cell culture technique were developed recently.

For egg allergy individuals- FluBlok is an influenza virus vaccine that is produced by expressing the influenza virus hemagglutinin protein in insect cells employing recombinant DNA technology and using a baculovirus vector.

New delivery methods like dermal patches that do not need cold chain maintenance are in clinical trials.

### **Antivirals**

Globally influenza A and B strains have developed resistance to M2 inhibitors; amantadines and seasonal influenza A H<sub>1</sub>N<sub>1</sub> is resistance to oseltamivir globally.

New agents like peramivir (an IV form) completed stage III trials and licensed only for emergency use.

### **Diagnosis**

Fluorescent antigen detection methods have been replaced by PCR.

Rapid/ point of care tests: has move from low sensitivity to relatively high sensitivity. They have been tested recently in epidemics and in outpatient settings with promising results.