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Sanofi evaluates impact and prevention of influenza at ‘Options X’

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Flu which can lead to pneumonia, heart attack and stroke is now preventable through Flublok®, the first recombinant Influenza Vaccine and Fluzone® High-Dose Vaccine (IIV3-HD)

Sanofi Pasteur, a world leader in influenza and paediatric vaccines, organised a symposium in Singapore on acute respiratory disease to demonstrate the public health impact of influenza and its prevention. At the world’s most significant influenza meeting, experts from around the world gathered for the "10th Edition of the Options for the Control of Influenza Conference (Options X)". Presentation and discussions were held aiming to unravel the potential ways to manage and prevent flu affecting global population due to underestimated consequences.

In 2018, researcher’s discovered the influence and hidden complication of flu on heart diseases. Robert Booy, Sr. professorial fellow at Australia’s National Centre for Immunisation Research and Surveillance; Charlotte Warren Gash, Assoc. Prof., London School of Hygiene & Tropical Medicine, elaborated on the cardiovascular complications and other domino effect of influenza. Rosalind Hollingsworth from Sanofi Pasteur who is a global medical expert lead on influenza, evaluated the impact of influenza vaccines on cardiovascular outcomes from an industry perspective.

The flu can also aggravate underlying conditions such as asthma, chronic obstructive pulmonary disease (COPD), heart disease and diabetes. Robert Booy, Prof at University of Sydney, who also has research grants from the NHMRC, spoke on changing the paradigm of flu beyond it being just a respiratory disease and highlighted the secondary complications of influenza and other disease manifestations like respiratory conditions (pneumonia), diabetes, functional decline, cerebral or cardiovascular attacks (GI, muscular and shocks). Prof emphasised on the influenza burden due to substantial under reporting. He illustrated 5-10X increased risk of acute myocardial infarction (AMI), commonly known as heart attack within 7 days of laboratory confirmed influenza, whose relationship can last up to 1 year. An increased risk of mortality by 5-10X from influenza complications with concomitant cardiovascular disease has also been reported. Influenza also proven to cause significant complication for diabetics’ wit 3-6X higher risk of hospitalization. Influenza may disrupt carefully balanced metabolic control and in some cases trigger a process of metabolic deterioration that may eventually lead to ketoacidosis or even death. Diabetes may impair immune responses to influenza virus, thereby making patients more vulnerable to infection, especially for the one who have poor metabolic.

Details were also presented on Influenza leading to functional declines in aged group. Influenza mortality level are shown to be associated with higher rates of large decline in the activity of daily living (ADL) amongst aged population. A nationwide population based cohort study conducted in Taiwan on older population of ?65yrs suggested reduction in

mortality by Influenza vaccination. A study demonstrating the effect of influenza vaccine and 1 year risk of myocardial infarction, stroke, heart failure, pneumonia and mortality among ICU survivors aged 65 years and older had lower 1-year risks of stroke by 16% & death by 8%.

Dr Charlotte Warren Gash, Assoc. Prof, works on the data safety and monitoring board, funded by Sanofi Pasteur for an investigator-led RCT on the effect of influenza vaccination after heart attack and related future cardiovascular prognosis. Dr Charlotte presented an overview on the relationship between Influenza and myocardial infarction showing strong seasonal patterns in temperate climates. Recent population level studies also account for seasonality and environmental factors. Reports on influenza, rhinovirus, respiratory syncytial virus, adenovirus and human metapneumovirus(hMPV) were all significantly associated with MI and ischemic stroke admissions in those aged ?75 years after accounting for seasonality, long term trends and environmental factors in England, Hong Kong, Japan and US. Dr Charlotte depicted the potential mechanism which influences this association after an infection form influenza which eventually leads to plaque rupture and coronary thrombosis of heart. Annual influenza vaccine is recommended for patients with established cardiovascular disease (CVD) by WHO, ECDC, the US CDC, and also for its prevention.

Dr Rosalind Hollingsworth, Global Medical Strategy Lead for Influenza/RSV at Sanofi Pasteur, evaluated the impact of influenza vaccines on cardiovascular outcomes from an industry perspective. She stressed on the facts behind low Influenza Vaccine Coverage Rate (VCR) and emphasised on the measures to improvise VCR.

Sanofi Pasteur introduced the efficacy of Flublok®, the first ever recombinant Influenza Vaccine which contains 45µg recombinant hemagglutinin (HA) of each influenza vaccine strain in a 0.5-mL dose. Manufacturing process of this Quadrivalent/Trivalent Inactivated Influenza Vaccines (IIV) uses baculovirus expression vector system instead of eggs to produce large quantities of HA for influenza vaccine production. Baculovirus engineered with the gene of interest produces hemagglutinin (HA) protein from influenza strains selected by WHO. Flublok is not yet locally approved in Singapore.

Efficacy of Quadrivalent Recombinant Influenza Vaccine (RIV 4) has been compared to a Quadrivalent inactivated influenza vaccine (IIV4) in a Phase III, randomized, double-blind, multicentre efficacy trail. The study which subjected adults ?50 years of age, confirmed rtPCR-positive Influenza-like Illness (ILI) in 96 of 4303 RIV4 recipients (2.2%) and in 138 of 4301 IIV4 recipients (3.2%). Fluzone HD is indicated for prevention of influenza in people 65 years of age and older. Fluzone® High-Dose Vaccine (IIV3-HD) is an inactivated, split, influenza vaccine containing 60 mcg of hemagglutinin (HA) per strain, which contains 4x the amount of HA compared to standard dose influenza vaccines. IIV3-HD is the only influenza vaccine with a proven superiority versus standard dose vaccine in a randomised clinical trial with a demonstrated efficacy of 24.2% against primary end point compared to IIV3-SD.

The World Health Organization (WHO) advises annual flu vaccination for people aged 65 and above, people with pre-existing health conditions (such as diabetes, asthma, chronic heart or lung diseases), children aged 6 months to 5 years, pregnant women and healthcare workers to effectively prevent a flu infection and its complications.