

Houston Philosophical Society
Minutes of 615th Meeting, February 15, 2007

CALL TO ORDER: 7:53 p.m.

President James L. Kinsey called the meeting to order. He requested the members' input on the Executive Committee's proposal that the bylaws be amended to effect changes in the sections by the end of the year. Guests were introduced.

Jim Kinsey introduced the speaker: Dr. Robert B. Couch, Distinguished Service Professor, Baylor College of Medicine. Dr. Couch spoke on "Human and Avian Influenza."

Dr. Couch began with a short history of pandemic and interpandemic influenza. The epidemic described by Short in 1557 was characteristic: soreness of jaw, fever, sweating, bleeding at the nose, and sometimes pleurisy and pneumonia. The 1918 influenza pandemic was the most severe epidemic ever documented. Today influenza is the "the last of the great plagues," since the others, such as smallpox, have been controlled.

The understanding of influenza began with the discovery of the virus in the 1920's, although it was not initially associated with influenza. In 1931 the virus was isolated from swine influenza, and it was first isolated for humans in ferrets in 1933.

In uncomplicated cases influenza is manifested by sore throat, chest pain, headache, malaise, and fever lasting 3-4 days. The Influenza Center in Houston has shown there is an epidemic every year between November and March. What cannot be predicted are the cause and severity. Type A causes 2/3 of the cases and type B, 1/3.

The proteins and RNA of influenza are well known. The characteristic feature that describes the biological behavior of the types is mutations in hemagglutinin (HA). The gradual evolution of the virus is a result of amino acid substitutions that result in antigenic drift. Drifted viruses can escape antibodies to earlier variants, resulting in the replacement of HA with novel HA, a reassortment referred to as antigenic shift, and causing interpandemics.

Type A influenza has four subtypes: H1N1, associated with pandemics in 1918-1956; H2N2, associated with the Asian flu, 1957-68; H3N2, associated with Hongkong flu, 1968; and H1N1, associated with Russian flu, 1977 through the present.

Types B and C have no associated subtypes.

Epidemics from 1975-84 show a mixture of A and B epidemics. This year's vaccine includes A, B, and C. There is some concern about both A and B.

It is difficult to get the amount of vaccine right. There was a shortage in 2004; this year there is a surplus. In the typical sequence, the virus enters a community; outbreaks begin among school children, causing school absences, clinic visits and hospitalizations; outbreaks spread to adults, causing work absences; there is increased adult hospitalization with some deaths; and the influenza goes back out of the community. The estimated annual health impact in America based on the Houston figures is 50 million respiratory illnesses, of which 28 million are medically attended, with 218,000 hospitalizations and 27,000 deaths.

Vaccines and antivirals are used for prevention and treatment. Inactivated vaccines are recommended for healthy and high-risk person older than 6 months and live attenuated vaccines, or antivirals, for healthy persons 5-49 years old, particularly children. Inactivated viruses are recommended in the fall pre-risk season for high risk persons and those who could transmit to high-risk persons. Vaccines offer 70-90% protection in healthy adults under 65 years of age, significant protection in children, and, in adults over 65, protection against the more complications. Zanamivir is almost 100% effective in children 15-71 months old. Antivirals are effective for both A and B, shorten the course of the influenza, but have to be started less than 48 hours from onset; there is almost no resistance development to these.

Bird flu is not yet a medical problem. It results from a major change in HA, is highly pathogenic and easily transmitted, and there is no immunity. Culprits are migratory water fowl. The virus infects but does not kill the birds, who fill the lakes with virus north to south. It can get mixed with domestic chickens and pigs. There are 16 HA subtypes in waterfowl, of which 3 have shown up in human. The highest priority are those subtypes that are most common in birds. Occurrences have been reported all over Asia and have been moving west since 2003, but the virus does not efficiently transmit from human to human. Control consists of prevent emergence by killing birds and quarantining human cases; preventing the spread by closing schools, prohibiting gatherings, restricting travel, quarantining cases, and using antivirals and vaccination; interrupting transit; and preventing infection. Although there is little to no spread between humans, the threat of gene reassortment is the rule. Therefore, preparation for a pandemic is appropriate. A pandemic *will* occur. Three trials of H5N1 vaccines have been done but with poor results. This is now a major subject.

Influenza will not be vaccinated out of existence in our lifetime. Rather, the goal is to bring the pandemic down to a level where it lacks the medical significance it has now.

The meeting was adjourned at 9:00 p.m.

Submitted,
Evelyn Keyes
Recording Secretary