Milwaukee Academy of Medicine
1358th Meeting
January 19, 2021

Dr. Jack Klineman, President, opened the 1358th meeting of the Academy. An appeal was made for more member involvement in the Academy, such as contributing to the newsletter or becoming member of various Academy positions. Contact Angie! He thanked Dr. Leslie Martin and Dr. Matt Lee for their work as Program Chairs. Names of the new Officers, Council Members and Trustees were also announced. He introduced Dr. Rita Hanson, President for the year 2021. Dr. Ellen Blank announced the 2021 Humanitarian Award recipient, Dr. Peter L Havens, and narrated his years of meritorious work doing research and treatment of HIV infection in children and adolescents at the Medical College of Wisconsin, Milwaukee, WI.

Dr. Rita Hanson, President, introduced the speaker, Peter L Havens MD, MS, Professor of Pediatrics (Infectious Diseases) at the Medical College of Wisconsin, Milwaukee, WI. The topic was "Pfizer-BioNtech Covid-19 Vaccine". Highlights of the January 19, 2021, Zoom presentation to the Milwaukee Academy of Medicine are summarized by K. Shetty and L. Martin.

Summary of the presentation by Dr. Havens is as follows: Corona viruses usually cause mild diseases in children, but more lethal varieties can cause SARS, MERS, and Covid-19. Covid-19 is also known as SARS-Cov-2. During infection, a receptor on viral spike proteins binds to an ACE2 receptors on human cells, causing infection. SARS-Cov-2 mRNA contained in the vaccine is very unstable and is packaged within lipid nanoparticles for stability. When injected mRNA enters into dendritic cells and macrophages, it encodes for, and is translated into, the spike protein. This occurs in the ribosomes of the cytoplasm, and genetic material does not integrate into the DNA. Spike protein formed is further broken down into peptides which appear on the surface of the cell as antigens. Initially there is an IgA response which is important for mucosal defense, followed by neutralizing IgG antibody production peaking in about 2 weeks. IgG levels start waning after 4 months, but Killer T cell immunity continues. When there is an infection with the virus, memory Killer T cells are activated and produce interferon which destroys the infected cells. This is followed by the anamnestic reactivation of memory B cells in 2 to 3 days with the manufacture of IgG antibody. Immunity is known to continue for about 8 months but could last longer.

Pfizer and Moderna vaccines have about 95% efficacy. Partial immunity develops about 10 to 12 days after the first dose, and maximizes 1 to 2 weeks after the second dose strongly boosts immunity. Asymptomatic infection is likely after immunization, and one needs to continue prophylactic methods to stop transmission to others. New virus variants seem to be more infectious, but thus far are not associated with greater case mortality. The Pfizer-BioNtech vaccine seems effective for variant forms, because multiple antibodies are produced against different protein components of the spike protein. Covid-19 is likely to persist in the future as an endemic disease that first infects people during their youth, when illness is milder, like other common corona viruses. People who take ACE2 inhibitors for hypertension should continue their medications. Severe anaphylactic reaction to the vaccine may occur in 1 in 100,000 individuals, usually with a history of serious previous allergy. Previous history of Gillian-Barre is not a contra-indication for vaccination as per the CDC. A patient who had natural infection with Covid-19 needs to wait 90 days for vaccination. Vaccine acquired neutralizing antibody immunity seems, at least initially, to be greater than that acquired by natural infection. Herd immunity requires 70 to 80% vaccination of the general population and, if achieved, would help prevent development of mutant strains of the virus.

The presentation was followed by a lively Q&A session. Highlights from the January 2021 Q+A session include:

- The half-life of immunoglobulin is 21 days.
- In chimpanzee exposed to adenovirus antigen, lower doses can produce stronger immunity. Why?
- Immunocompromised people were not included in studies, but the vaccine seems safe. Vaccinating the immunocompromised may work provide some protection, and creating "rings of vaccination" (herd immunity) around them also is recommended.
- The New York Times site, "The Coronavirus Outbreak", is excellent and constantly updated.
- Covid19 may be more severe during pregnancy, and may affect the fetus, so it seems reasonable to vaccinate pregnant women.
- There now are many variants of the virus. A South African spike protein mutation impedes neutralization by antibody from prior infection or vaccination.
- Children do not become severely ill with Covid19. Four coronaviruses now are endemic, and the population frequently gets reinfected with them, boosting immunity and preventing serious illness later in life. Will we vaccinate children for the 5th coronavirus?
- Angiotensin receptor blockers seem neither harmful nor beneficial, as suggested by the fact that a severity pattern has not been identified for other coronaviruses that are endemic.

Dr Havens was given a strong and well-deserved round of applause, and he thanked the Academy for honoring him with the 2021 Humanitarian Award.