How soon can we expect a vaccine?
By Wayne C. Ko, PhD

In the best-case scenario, Dr. Anthony Fauci, director of the U.S. National Institute of Allergy and Infectious Diseases, is cautious about the rapid development of Covid-19 vaccines. The initial 90-day period of vaccine research is needed to determine whether a vaccine can stop the virus. Subsequently, it will take months to develop more effective vaccines. Dr. Fauci points out that it is impossible to predict the future course of the disease, and that the vaccine will only be effective if the virus is not eradicated. As COVID-19 vaccine candidates move to clinical testing, efficacy in older adults is now making a range of adjuvants available to help speed COVID-19 vaccine development, and we will look at this topic in future issues of Spotlight.

This aging of the immune system is associated with significant increases in age-related disease. In the case of seasonal influenza older adults make up by far the largest morbidity and mortality across a wide range of noncommunicable and infectious diseases. This aging of the immune system, and associated with underlying many of the co-morbidities which heighten risk in COVID-19 disease.

In the worst-case scenario, in which the virus spreads rapidly and many people die, there will be no vaccine. In this case, the virus will be eradicated through social distancing and hand washing. However, it is likely that a vaccine will be developed. The key is to focus on developing vaccines for the elderly population, and we will look at this topic in future issues of Spotlight.

In addition to the R&D challenges, there are a number of key advocacy and policy coordination and facilitation of global efforts to optimize the potential for success. While the global R&D community is focused on SARS-CoV-2 vaccine development, the potential immune enhancement or allergic inflammation caused by T cell responses to the spike protein is a major concern. These include: the current lack of understanding of how to generate long-term immunity in older adults; the challenge of generating a protective immune system; and the challenge of inducing a protective immune response in older adults.

In the future, we will see a range of vaccines developed for COVID-19. These experimental vaccines include a diversified set of platforms such as live attenuated and inactivated approaches, similar to those successfully developed for TB and malaria, and peptide-based vaccines. These vaccines will be tested in animal model studies, and adaptive clinical trial designs may enable initial vaccines to enter clinical trials in the coming months.

In addition, while SARS-CoV-2 is an enveloped RNA virus that is capable of variation, the current lack of understanding of how to generate long-term immunity in older adults poses a significant challenge. The key is to focus on developing vaccines for the elderly population, and we will look at this topic in future issues of Spotlight.

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