

21st Century: THE CENTURY OF VACCINES



The 21st century is shaping up to be the “century of vaccines,” as vaccine developers make striking progress against both emerging and longstanding diseases, according to *Vaccines: Preventing Diseases and Protecting Health*, from the Pan American Health Organization (PAHO).

Taking aim at a range of diseases—including HIV/AIDS, SARS, West Nile virus, Ebola hemorrhagic fever, drug-resistant malaria, dengue, and anthrax—new vaccine development ventures appear to be keeping pace with the growing threat of emerging and re-emerging diseases. More than ever in history, vaccines in this century promise to be the first and best line of defense against disease, according to the new book.

The book takes an in-depth look at the past, present, and future of vaccines and immunization programs. It brings together the best and brightest minds in vaccinology and public health to examine key emerging and re-emerging diseases and how existing and upcoming vaccines are doing battle against them.

A prime example is West Nile virus, which first appeared in the United States in Queens, New York, in 1999. Four short years later, explains Anthony S. Fauci, director of the National Institute of Allergy and Infectious Diseases, his institute funded a fast-track vaccine development project in the private sector to create a chimeric vaccine against the virus. Showcasing how rapidly vaccine development can progress in today’s world, phase 1 testing on the vaccine is scheduled to begin any day.

In February 2003, the first few cases of Severe Acute Respiratory Syndrome (SARS) were reported in Asia. The disease fanned out to more than two dozen countries, and by September 2003, cases tallied more than 8,000, and SARS-related deaths stood at 774, according to the World Health Organization (WHO). The National Institute of Allergy and Infectious Diseases is supporting the development of several vaccines against SARS, both at the Institute’s Vaccine Research Center and elsewhere. Currently in the pipeline are an inactivated virus vaccine similar to effective vaccines against other viruses, as well as vector-based, recombinant and DNA-based vaccines. A SARS vaccine may well be in the offing.

Dengue has been on the rise since World War II. Today, more than 2.5 million people are at risk for the disease because they live in areas infested with dengue’s mosquito vector. Climatic and environmental changes may be extending the vector’s reach, potentially endangering even more populations. Each year there are up to 100 million cases of dengue, including a half-million cases of the potentially fatal dengue hemorrhagic fever. Despite many challenges for developing a successful dengue vaccine—the need to develop a vaccine for each one of the four serotypes and a lack of an animal model for testing, to name two—there is hope for a dengue vaccine in the near future. Vaccines for other flaviviruses, such as yellow fever, Japanese encephalitis, and tickborne encephalitis, have been successful. Commercial vaccine developers are working on bringing to market a tetravalent dengue vaccine that would

protect both travelers to dengue endemic areas and those who live there. Some vaccines are already in phase 2 clinical trials; others are just now moving to clinical trial.

In addition to these examples, *Vaccines: Preventing Disease and Protecting Health* provides in-depth discussions on the historic role of vaccines in disease prevention and eradication; on the regulation and licensing of vaccines and the ethical and financial sustainability of vaccination programs; and on cutting-edge vaccine development ventures. The book’s editor, Dr. Ciro A. de Quadros, is currently director of international programs at the Albert B. Sabin Vaccine Institute, and was for several decades the architect of PAHO’s successful immunization programs in the Americas.

The Pan American Health Organization (PAHO) is an international public health agency with 100 years of experience working to improve health and living standards of the people of the Americas. It enjoys international recognition as part of the United Nations system, serving as the Regional Office for the Americas of the World Health Organization, and as the health organization of the Inter-American System.



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