

THE WALL STREET JOURNAL.

Link: <http://ow.ly/6tqx9>

OPINION

JUNE 18, 2011

Thirty Years of Fighting AIDS: A Progress Report

Animal-based research hasn't been effective. A vaccine will come from studies involving the human body.

By LAWRENCE COREY

In June 1981, I was a medical virologist developing the first antiviral medication to treat genital herpes. One morning over coffee, I picked up the Centers for Disease Control's Morbidity and Mortality Weekly Report and read about a new disease that was likely sexually transmitted, likely caused by an unknown virus and fatal.

The discovery did not frighten me at the time. I was confident in the scientific community's ability to use molecular technologies to identify the disease-causing agent. Our success in developing safe antiviral medications gave me confidence that we could find a treatment for this new disease.

What I could not anticipate was that the virus, HIV, would go on to profoundly affect global medicine, social policy, and childhood and adult mortality. Nor could I foresee the inability of our global society to control this infection.

June 5, 2011, marked 30 years since the CDC first identified HIV/AIDS. Since that time, we have developed antiviral medications that suppress the virus's replication in humans as well as many supportive treatments for those infected with HIV. A recent study indicates these medications can even reduce transmission to sexual partners.

But we have not controlled the spread of HIV throughout the world, and we have not found a cure.



Getty Images/Stock
Illustration RF

We have seen several victories. Within 12 years of discovering the virus, research funded by the National Institutes of Health in partnership with pharmaceutical companies, such as GlaxoSmithKline, resulted in the discovery of a series of drugs that have turned a 100% fatal disease into one for which average life expectancy exceeds 20 years. Today, millions of people are living with this virus who previously would have died.

The development of drugs that attack the virus at different stages of its life cycle is one of the most remarkable achievements in medical science in the last 20 years. The reduction in maternal-fetal transmission, infant mortality, and death rates among persons receiving these antiviral medications is remarkable.

The success of these therapies, however, has fooled us into believing HIV is under control. It is not. While HIV infection can be controlled in a person, HIV as a virus that can be transmitted to others unknowingly has not been effectively controlled in the population at large. In the U.S., more than 55,000 new cases are diagnosed every year, a figure that is up more than 10% from a decade ago.

Not all the news about the HIV epidemic is bad. Some preventive strategies appear to be effective. Circumcision reduces the acquisition rate of HIV in heterosexual men by 35% to 50%, and antiviral-vaginal gels appear to reduce acquisition in women.

Yet these measures are partial at best. Patient compliance with taking daily antiviral medications over many years continues to be a massive problem. Condoms are effective, but the last 20 years have shown sustained use has never been achieved at the population level. These measures have helped moderate the epidemic but haven't solved it.

The fact remains that no sexually acquired infection has ever been controlled in democratic societies except by vaccines. It is clear that the only long-range solution for ridding the world of this disease is through the development of a globally effective HIV vaccine. The scientific community has so far failed to deliver such a vaccine.

This failure has not been for lack of effort. HIV has been a formidable opponent, even with modern biological technologies. HIV acquisition and transmission is silent and, in most cases, sexually acquired. And the HIV infection itself remains silent for years.

Fortunately, in the last two years, there have been signs that a path forward for

vaccine development has been identified. A vaccine combination studied in Thailand through a research collaboration among the Thai Ministry of Health, the U.S. Military HIV Research Program, and National Institutes of Health showed a partial efficacy of between 30% and 40%. While such efficacy is not good enough to license and use, it builds a bridge to a better vaccine.

At the same time, the trial reaffirmed that HIV is uniquely adapted to humans, and that our current scientific models to predict vaccine effectiveness are flawed. There is little corollary between animal and human models for HIV; killing the virus in a laboratory or animal host does not guarantee success in humans. This has been a source of much frustration. One thing is clear: If we are going to create a vaccine to rid the world of this disease as a source of human suffering and death, then the research battle must be waged within the human body. We have reached a phase in vaccine development where we must increase the pace and number of advanced-stage human clinical vaccine trials, particularly if we see that the vaccines currently in the pipeline are building upon the results from Thailand.

Parallel to that effort, the United States and other countries must reinvest in the infrastructure to produce vaccines. Right now, the laboratories that produce vaccines for everything from influenza to pneumonia are using technology first introduced in the 1950s. It is time to reinvest in vaccine production facilities in the interest of public health and to increase the production of new and safer vaccines. We must engage in large educational programs to explain that vaccines are safe and effective.

These efforts cannot be done by the private sector alone. At a time when our country bitterly debates the role of government in medicine, I know that only the government's participation in a public-private partnership will produce an effective HIV/AIDS vaccine.

We've done it before. In the 1950s, government and private science collaborated to eradicate polio in the West. Over the years, I believe the frequent citing of this case has led many to downplay it. Don't. It was a monumental undertaking. We must remember that it took more than four decades from the discovery of the polio virus to the delivery of the vaccine. That journey is a roadmap for all subsequent generations to follow when facing massive challenges, particularly one as deadly and smart as the HIV/AIDS virus.

In 1981, I was confident that medical science would ultimately find a vaccine for HIV. I have not lost that confidence. I believe the scientific and medical community is on the verge of developing a vaccine. I believe an effective vaccine is our best hope to eradicate this deadly killer. To end the reign of HIV/AIDS will

require an unparalleled commitment—both intellectual and financial. Yes, there will be setbacks, but there will also be successes. Ultimately, I believe, we will see the end of HIV/AIDS.

Only one question remains. Do we have the courage and tenacity to find a vaccine? I know the scientific community says "yes." Will civil society leaders agree?

Dr. Corey is president and director of Fred Hutchinson Cancer Research Center and principal investigator of the international HIV Vaccine Trials Network.