

# Opinion

## World AIDS Vaccine Day - May 18, 2007

### We Can't Let Our Modern Day Race to the Moon Fail

Ten years ago today, President Bill Clinton evoked President Kennedy's national goal of landing on the moon to set a new goal: develop an AIDS vaccine within the decade.

Those ten years have come and gone, and instead of a vaccine, we are faced with 39 million people living with HIV, four million individuals newly infected each year.

This raises a number of important questions: What has the field accomplished since President Clinton's remarks? Why don't we have a vaccine? What is needed to develop the most important vaccine of our lifetime?

To the first question, the answer is that the field has made significant progress. Because of large investments in basic research, we now know more about HIV than any other virus. Funding for AIDS vaccines has quadrupled to \$800 million annually and political support has grown tremendously. More than 30 AIDS vaccine trials are ongoing in 24 countries across every continent; 13 new trials were initiated in 2006 alone. New consortia comprising the top scientific minds and supported by the Gates Foundation, the International AIDS Vaccine Initiative, the National Institutes of Health, and others are now tackling some of the toughest remaining problems and the partners are working together under the rubric of the Global HIV Vaccine Enterprise.

We've come a long way, but we don't have a vaccine. The reason why is clear. Until recently, our efforts haven't been substantial or focused enough to combat HIV, a very formidable foe. Designing an AIDS vaccine poses a unique set of scientific challenges. HIV targets and destroys the very immune system that a vaccine normally triggers. The virus also is a moving target; millions of different HIV particles are constantly being produced through rapid mutation. And there is no perfect animal model: as a result, we are still trying to determine the most effective approach or combination of approaches to elicit an effective immune response to HIV in humans.

Despite these challenges, we will develop an AIDS vaccine; to do so sooner, we need to do four critical things now:

First, we need to speed the testing of the most promising existing approaches. The current paradigm is slow, intermittent and little changed from the testing of other, less pressing diseases. This time could be cut in half by seamlessly rolling from one phase of trials to the next, and by rapidly moving testing into communities where the incidence of HIV is high and where preliminary efficacy data can be quickly generated. This simple shift would weed out weaker products and could shave years off the development of a vaccine the world so desperately needs.

Second, we need to speed innovation and development of new classes of improved vaccine candidates. There are a series of scientific challenges which we believe will respond to coordinated attacks using the best of modern science applied through a series of goal-oriented research consortia, driven using the tools of industrial project management. Solving these challenges and using the results to develop novel candidates is a new form of rational vaccine design that is only recently possible.

Third, we need continued research capacity building in areas hardest hit by the epidemic, namely Africa and Asia. AIDS vaccine R&D must be conducted in a variety of settings, including in developing countries where 95% of new HIV infections are occurring. Additional assistance is needed to strengthen developing countries' infrastructure to enable distribution of a vaccine when it becomes available.

Fourth, we must provide novel incentives to stimulate greater involvement of the biotechnology industry and leading scientists, including those working in other allied disciplines. This means providing high-risk innovation funding to explore a wide range of promising experimental approaches and technologies. It also means looking at novel financing mechanisms like advance market commitments and the International Finance Facility, both being tested for use in other diseases but not yet applied to accelerate AIDS vaccine development.

As AIDS continues to ravage the globe, infecting 12,000 people each day and killing millions each year, we need to do everything possible to treat and care for those who are currently infected while simultaneously pursuing new prevention technologies, particularly vaccines and microbicides. Even a 50 percent effective vaccine given to just a third of adults could cut the number of new HIV infections by more than half. Yet, despite the importance of a vaccine, AIDS vaccine spending is still less than four percent of total AIDS spending.

Ten years ago today, Bill Clinton said, "It is no longer a question of whether we can develop an AIDS vaccine, it is simply a question of when." The world didn't meet Clinton's deadline, but we can meet his objective. We call on the global community to do its part; to redouble its long-term political and financial commitment toward developing an AIDS vaccine—our best tool for preventing the continuing spread and devastation of this pandemic.

*Seth Berkley is President and CEO of the International AIDS Vaccine Initiative*

*Peter Piot is Executive Director of the Joint United Nations Programme on HIV/AIDS (UNAIDS) and was a founding board member of IAVI*