

# SUNDAY FEATURES

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*While the discovery of a vaccine in Thailand that's partially effective against one strain of the HIV virus is a surprising success, it by no means represents the end of the road in the fight against AIDS*

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## One small step



Scientists announced the news on Thursday that many had all but given up hope of hearing: a drug trial in Thailand had shown that an experimental vaccine could protect against HIV/AIDS, even if only to a limited extent.

Few expected the Thai trial to succeed, following as it did more than a decade of disappointment in the search for a vaccine culminating, in the failure two years ago, of a product made by the drug company Merck which looked much more promising.

But in a surprise outcome, the Thai trial conducted by the US Army and the Thai ministry of public health

found that a combination of two drugs afforded a 31 percent protection against HIV infection. The result was even more surprising as the two vaccines used in combination, ALVAC and AIDSVAX, had not proven effective on their own. AIDSVAX flopped in trials in the US and also when it was given to 2,500 drug users at risk of HIV infection in Thailand.

Of the 16,000 male and female HIV-negative volunteers who took part in the biggest-ever AIDS vaccine trial, half were randomly assigned the combined vaccine and the other half a dummy injection. All participants had been counseled about protecting themselves and given condoms and treatment for sexually transmitted infections to reduce their chances of picking up the virus. Of the first group, 51 were infected. Of the second, 74 became HIV-positive.

The immediate reaction from AIDS scientists and campaigners came like a shriek of joy. "This is the first HIV vaccine candidate to successfully reduce the risk of HIV infection in humans," said Lieutenant General Eric Schoomaker, the US army's surgeon general. "We are very excited and pleased with the outcome of this trial and congratulate all those who participated in it."

"This is a historic day in the 26-year quest to develop an AIDS vaccine," said Alan Bernstein, executive director of the Global HIV Vaccine Enterprise, an alliance of research organizations and funders including the Gates Foundation. Warren Mitchell, executive director of the AIDS Vaccine Advocacy Coalition, called it a historic milestone.

But all recognized the enormous amount still to do if a promising trial result is to be turned into a routine vaccination. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases in the US, which part-funded the trial, said he was surprised and pleased by the outcome, but warned it was "not the end of the road." "It gives me cautious optimism about the possibility of improving this result," he said.

The trial has shown evidence that a "prime boost strategy," one vaccine followed later by the other, using two vaccines made of synthetic fragments of HIV based on subtypes B (common in the US and Europe) and E (common in Thailand and Southeast Asia) can

work. The full results will be presented at an AIDS vaccine conference in Paris next month.

The big unanswered question is why it happened, how the two vaccines together can work where singly they do not.

"Now we need to understand how some of the participants in this trial were in some way protected," said Robin Shattock, professor of cellular and molecular infection at St George's, University of London. "Once we understand what worked we can build on that to develop more effective vaccines."

Jasmina Saric of the department of biomolecular medicine at Imperial College London said the combined vaccines seem to work on "a molecular weak point" of the virus. She said a more protective vaccine would have to be combined with existing prevention efforts.

The next steps are more analysis, more research and more trials. If efficacy had reached more than 50 percent the vaccine combination would have been submitted to the Thai authorities for a license. There is some way to go yet, and much to do if the approach is to be adapted

to make a vaccine that works in Africa, where the strain is different and the need is greatest. The ALVAC and AIDSVAX approach may not, in the end, be the vaccine that saves the planet from AIDS, but this is one step further to one that will.

### Questions and answers about the Thai vaccine trial

**Q: Does this vaccine mean the end of the AIDS epidemic?**

**A:** Definitely not. The real significance of the results from the ALVAC-AIDSVAX trial in Thailand is that, for the first time, after more than two decades of work, scientists have come up with a positive result from an AIDS vaccine trial. There is much more work to be done before any sort of vaccine can be introduced.

**Q: How good were the results?**

**A:** The benefit from the vaccine was modest. It gave those who were vaccinated a 31 percent (one in three) chance of not being infected with HIV when put at risk.

**Q: Is a vaccine that gives only 31 percent protection any use?**

**A:** Yes, because of the large numbers still getting HIV — in 2007, more than 2.5 million people were newly infected. For the same reason, a partially effective malaria vaccine is now in the last stage of trials on children in Africa.

**Q: Why was the trial carried out in Thailand? Was it ethical to carry out such an experiment there rather than in Europe or the US?**

**A:** Both ALVAC and AIDSVAX were tested in the US and Europe for safety and efficacy before moving on to major trials in Thailand. The country was chosen for two reasons: first, a great deal of research had been done there into the Thai strain of HIV, and second, there are large populations at risk because drug injecting has been common and because HIV is transmitted in the heterosexual population far more than it is in the West. The combined vaccine is therefore focused on the Thai strain of HIV.

**Q: Will the AIDS vaccine work in Africa?**

**A:** Probably not. It is a proof of concept, though, and scientists will hope they may be able to fashion something for use against African strains — and, for that matter, US and European strains.

**Q: Why was the US Army involved in this trial?**

**A:** The US military has long engaged in research into infectious diseases, originally with the aim of protecting American soldiers. When the AIDS epidemic took off in the heterosexual population of Thailand in the early 1990s, researchers based at the Walter Reed Army Medical Center in Washington helped to isolate the Thai viruses and make them available to companies trying to develop HIV vaccines. US Army scientists led the trial, in collaboration with the Thai ministry of public health. Funding came from the army but also the US National Institutes of Health.

**Q: Will US soldiers be the first to get vaccinated?**

**A:** The Thai population has to be first in line and the vaccine will have to be adapted if it is to be of any use in the US.

SOURCE: THE GUARDIAN

Top right: Katin Ketsamrau, left, and Angsana Suyata, pictured at the Human Development Foundation in Bangkok, Thailand. Both were infected with HIV at birth.

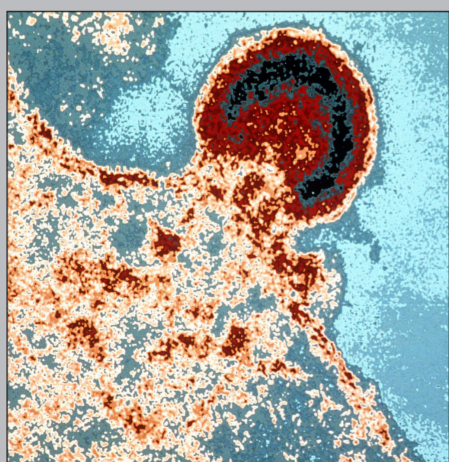
Above: A patient takes his lunch on a bed in a hospice for people living with HIV at Wat Phra Baat Namphu Temple in Lopburi Province, Thailand.

Below: The HIV-1 virus is seen under a microscope.

Far right: A Thai technician works on blood samples taken from volunteers at a lab at the Armed Forces Research Institute of Medical Sciences in Bangkok, Thailand, on Friday.

Right: A Thai official walks past an anti-HIV campaign poster displayed at the Thai Ministry of Public Health in Bangkok on Thursday.

PHOTOS: AGENCIES



### Key dates in the HIV/AIDS epidemic

**June 5, 1981:** The US Centers for Disease Control and Prevention reports five gay men in Los Angeles are suffering from a rare pneumonia found in patients with failing immune systems.

**May 1983:** The virus that causes AIDS is identified.

**May 26, 1988:** The US government mails *Understanding AIDS*, an educational pamphlet to 110 million American homes.

**Aug. 18, 1989:** The number of AIDS cases reported in the US reaches 100,000.

**June 1991:** By the 10-year anniversary of AIDS, more than 250,000 Americans have been diagnosed with it and up to 1.5 million more people are infected with HIV.

**Dec. 7, 1995:** The US Food and Drug Administration (FDA) approves a new class of drugs for treating HIV, protease inhibitors, a move the government calls some of the most hopeful news in years for AIDS patients. The drugs help transform the disease to a manageable chronic illness.

**Feb. 27, 1997:** The US government reports a 13 percent drop

in AIDS deaths in the first half of 1996, the first significant drop in the epidemic's history.

**Jan. 31, 1999:** Researchers report they have convincing proof that the AIDS virus has spread three separate times from chimpanzees to people in Africa — one of the transmissions starting the worldwide epidemic.

**June 2001:** At the 20th anniversary of AIDS, the number of Americans diagnosed with the disease tops 700,000. More than 420,000 have died. Worldwide, more than 36 million people are infected with the AIDS virus, with more than 16,000 new infections each day.

**Aug. 23, 2001:** The growing scale of the AIDS epidemic in China is acknowledged for the first time by its government.

**Oct. 16, 2001:** South African health officials issue a report on the devastating impact of the HIV/AIDS epidemic in that country.

**Nov. 7, 2002:** The FDA approves an easy-to-use 20-minute HIV test.

**Jan. 28, 2003:** US President George W. Bush in his State of the Union address proposes US\$15 billion in funding in

the next five years for emergency AIDS relief in Africa and the Caribbean.

**February 2003:** Two big studies find that AIDSVAX, an experimental vaccine made by VaxGen, did not protect against infection with HIV.

**Feb. 17, 2004:** A UN report warns of the growing AIDS crisis in Eastern Europe and the former Soviet Union.

**March 24, 2004:** The FDA approves an oral HIV test that gives results in 20 minutes.

**September 2007:** An international test of Merck & Co's experimental vaccine is stopped early, because the shots seemed to offer no protection. Further study of the results found potential increased risk of HIV infection among certain men who received the vaccine, although the vaccine itself did not cause infection. A second study also was halted.

**July 2008:** UNAIDS estimates the number of deaths worldwide from AIDS in 2007 at 2 million; the number of people living with the AIDS virus is estimated at 33 million. Nearly 7,500 people worldwide become infected each day, UNAIDS estimates.

SOURCE: AP