AIDS Drug: Not Cure, But Hope

A new drug's preliminary success in prolonging the lives of AIDS patients prompted the federal government last week to call off placebo-controlled trials and make the drug more widely available. While azidothymidine (trade name AZT) is the first drug shown to benefit AIDS victims, researchers at a press conference announcing the decision emphasized that it is not a cure.

Clinical trials of the drug began in February, following toxicity tests. Recipients were AIDS patients who had been stricken with *Pneumocystis carinii* pneumonia within the previous four months. Some patients with AIDS-related complex (ARC), who have some of the symptoms of AIDS, also received the drug. But there were not enough data to determine whether AZT is beneficial for them.

Among 145 AIDS and ARC patients receiving AZT, there has been one death, while 16 of the 137 receiving placebo have died. AZT, says Assistant Secretary for Health Robert E. Windom, "is the first therapeutic agent that seems to hold promise for some AIDS patients."

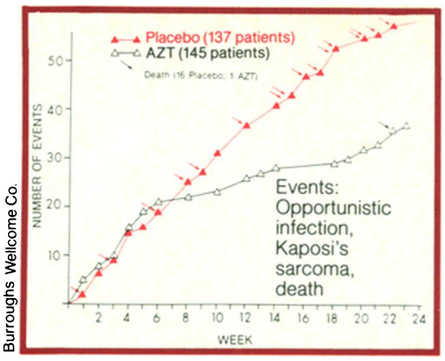
But Windom, along with researchers involved in the clinical trials and representatives of Burroughs Wellcome Co., the drug's manufacturer, all emphasized that the drug is not a cure for AIDS. Among the reasons for caution:

- The drug can be toxic. It suppressed bone marrow production of red and white blood cells in some patients, which could be even more of a problem if the drug needs to be given indefinitely.
- The clinical trials lasted only six months, and the data analysis was, in the words of David W. Barry of Burroughs Wellcome in Research Triangle Park, N.C., "very rapid."
- While the drug stops replication of the virus, it does not destroy "quiescent" (nonreplicating) virus.
- AZT was tested only in adults who had *Pneumocystis carinii* pneumonia; what will happen in other AIDS victims — children and adults with other infections or cancer — remains to be demonstrated in further trials.

AZT has traveled quickly from laboratory to human use. "After less than two years," says Barry, "we are at the point we would normally be after four to five years."

AZT was first synthesized in the early 1960s as an anticancer agent. It is an analog of thymidine, one of the components of RNA and DNA. AZT showed no anticancer activity, and was shelved until several years ago when Burroughs Wellcome tested it as a general antiviral drug.

In June 1984, after the AIDS virus was identified and isolated, the company found that AZT inhibited replication of the virus in the test tube. Other laboratories confirmed the finding. In July 1985, Samuel Broder of the National Cancer Institute began initial human trials of AZT, and several other institutions got involved. Early results (SN:10/12/85,p.229) were promising, and the drug was found to cross the blood-brain barrier, an important factor since the virus resides in brain tissue.



Burroughs Wellcome Co.

Serious events became less frequent after six weeks' AZT use.

A double-blind, placebo-controlled study of oral AZT began in February 1986 at 12 U.S. hospitals. The trials were halted last week after an independent board sponsored by the National Institutes of Health reviewed the data collected so far and decided that it was no longer ethical to give some of the participants a placebo instead of the drug.

In order for the AIDS virus to reproduce itself, it first manufactures an unusual enzyme, reverse transcriptase. The enzyme matches up nucleosides, the building blocks of DNA and RNA, along a strand of the virus. According to Broder, when AZT is present in an AIDS-infected cell and the virus is replicating, the reverse transcriptase uses the drug as it would use thymidine, which is one of the nucleosides. But unlike thymidine, AZT prevents further replication along the virus strand, and the virus, committed to replication, is destroyed. The cell's own reproductive capabilities are evidently spared because it relies on different enzymes.

AZT is considered an investigational new drug by the Food and Drug Administration. Until it receives final FDA approval, expected early next year, Burroughs Wellcome will be providing it free to any AIDS patient accepted into a clinical study. To enroll, patients' physicians can call for an application; if the patient meets the criteria — full-blown AIDS, recent pneumonia and an indication that he or she is healthy enough to respond to treatment — the company will supply the drug to an approved hospital pharmacy where the patient can get it. Patients and physicians can call (800) 843-9388 for more information.

About 60 percent of the 11,000-plus U.S. patients with AIDS will meet the criteria, estimates Anthony Fauci of the National Institute of Arthritis and Infectious Diseases. According to a company spokesperson, Burroughs Wellcome will be able to supply the drug in sufficient amounts.

Further trials will be done to determine if AZT is helpful to ARC patients. Because of the drug's potential toxicity, it is not likely to be used soon in people who have antibodies to the virus but no signs of disease, researchers say.

Trials of other potential AIDS treatments will continue, but, says Fauci, many of the protocols will likely change, with AZT taking the place of placebos or added to other drugs. AZT also still needs evaluation before it can be recommended for other manifestations of AIDS.

"While it's not a cure," says Paul Volberding of San Francisco General Hospital, one of the institutions that tested AZT, "it's the first good news we've had so far. We need to remain cautious in our optimism, but at least it shows something can be done." — *J. Silberner*

Another U.S. rocket works

The NOAA-10 weather satellite, whose launching was reported by NASA to have been postponed 16 times since its originally scheduled liftoff in August 1985, was successfully sent into orbit last week by a refurbished, 25-year-old Air Force missile. It was not the first use of such a rocket, called an Atlas E, since the Jan. 28 explosion of the space shuttle Challenger — one was successfully launched on Feb. 9 carrying a classified Air Force payload. But since that time four other kinds of U.S. boosters, as well as Europe's Ariane, have suffered catastrophic failures during their attempts to get into space.

In other words, each new success from U.S. launch pads these days is valued even more than it would have been before everything started going awry. On the day before NOAA-10's liftoff, the prelaunch schedule included a flight-readiness review by the Air Force (from whose Vandenberg base the firing would happen), the formal "signing off" on various certifications by agencies and contractors, and communications checks between Vandenberg and the National Oceanic and Atmospheric Administration (NOAA) satellite control center in Suitland, Md. In addition, officials took one last look to make sure there were no outstanding "parts-alert lists" about possible hardware concerns that might have been overlooked. They found none. □